PHOTOFACT* FOLDER SET

*TRADE MARK

NO. 60

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The PHOTOFACT Servicer

★ *Published for all users of Howard W. Sams' Photofact Folders* ★

AN ANALYSIS OF THE HOME RECORDING MARKET

The present confusion in the commercial recording field and the great to-do attending the rapid expansion of television facilities have all but obscured what, a short time ago, appeared to be a promising, healthy development allied to the radio entertainment field. We refer to home recording activities which, spurred by the arrival of magnetic recording, seemed ready to take a major position in the industry.

The fact that servicemen generally have not measurably increased their revenues through care of this equipment, or sale of accessories for it, is a topic of wide discussion. While making no pretense of being an authority on the subject, we would like to offer our analysis for what it is worth and for any help it might provide.

Up to the present time, there have been four systems employed, to some extent, in this field, namely:

1. Disc recording.
2. Magnetic wire recording.
3. Magnetic tape recording.
4. Sound-on-film (home movie equipment).

Since item No. 4 is concerned mainly with a medium other than recorded sound entertainment, this discussion will be limited to the first three types.

It seems to us that one of the major drawbacks appearing originally in design, and carried on later through merchandising activities, is that the equipment has been regarded as a toy or a novelty, rather than a full-fledged entertainment medium capable of recording and reproducing quality comparing favorably with commercial work. By stressing the novelty appeal, such as the ability to record parties or gala occasions within the home, these recording mediums have effectively lost their approach to the serious entertainment field. The majority of such equipment is capable of reasonable fidelity, in terms of musical entertainment, whether it be copying of existing recordings, or new recordings of outstanding or favorite selections by well-known artists. It, of course, goes without saying that, since most of the popularly priced equipment is made to be portable, there is a practical limit to the quality, particularly with respect to reproduction. Larger power amplifiers and reproducers, capable of improved fidelity, can be available in stationary installations, and it has been our experience that when such modifications are employed, the customer's enthusiasm for serious recording has increased tremendously.

Another factor, which has mitigated against large-scale operation of magnetic recording and reproducing equipment, has been the absence of any means of obtaining pre-recorded wire or tape reels of popular selections or performers. Within the last month, we have seen announcements in trade publications of automatic mass copying devices for both wire and tape recordings. If these magnetic recording producers can compete in terms of cost with other forms of recording, it would seem to point to a much larger acceptance and use of the newer recording system. This assumes that a satisfactory arrangement can be worked out with respect to talent and/or license considerations.

In terms of consumer interest, the magnetic form of recording seems to have found greater response, even initially, than that enjoyed by the disc type over a number of years. The average non-technical user believes them simpler to operate, and the erase, re-use characteristic undoubtedly has drawn some adherents, although this feature can boomerang if proper care is not observed in handling and marking.

As far as fidelity is concerned, we believe that either disc or magnetic recording can be entirely satisfactory. The degree of fidelity in the individual application is almost

entirely dependent upon the skill of the operator and the quality of the associated equipment. We do feel that manufacturers of recording equipment should recognize the almost complete lack of technical knowledge in their average consumer and guide themselves accordingly in operational instructions. A person soured once by poor recordings, even though the fault lies with him rather than the equipment, is a poor prospect for continued accessory sales or service care.

We suggest the following practices for servicemen who are called upon to care for recording equipment, or who desire to solicit such business.

1. Become completely familiar with the design and intended operation of the equipment before attempting service. Relatively slight maladjustments at critical points can render the whole unit operation unsatisfactory. This applies particularly to speed or tension regulation in disc or magnetic recorders.

2. Explain the capability of the unit to the customer. Point out the limiting factors of expected fidelity in terms of either the recording or playback operation. If the customer's application will permit improvements which might add to size or weight of the equipment, suggest consideration of such modification.

3. Make sure that the customer is completely aware of the correct normal manual routine in preparing the instrument for operation. For example, there are preferred methods for wire or tape loading, and there are preferred start and finish positions in disc work. If these conventions are constantly observed, the customer can expect a reasonably consistent product.

4. If your business is set up to handle such an activity, suggest or solicit customer installation jobs. Almost all types of recorders, changers, amplifiers, tuners, and reproducers are available as separate package units. The variety of types, sizes, shapes and ratings available, provide sufficient flexibility to meet almost any requirements of size, quality and cost.

5. Last, but not least, make certain the customer understands that the recording can never be superior to the material source. The general public seems to regard electronic apparatus as something akin to magic. We feel that it is better to alter illusions at the start, than to risk dissatisfaction later.

In our opinion, home recording activities will continue on the increase and we believe that it will pay servicemen to become proficient in the adaptation or service of such equipment.

VOLUME 6 - ANOTHER MILESTONE

This PHOTOFACT FOLDER SET (No. 60) completes another volume. It is being issued on the third anniversary of the founding of Howard W. Sams & Co., Inc. We feel that you, the service technician members of the Howard W. Sams' family, join with us in this "birthday celebration".

These three years have been eventful in that they have been marked by revolutionary changes in the electronic home entertainment field. The increasing complication of the servicing problem has been a challenge, both to you - the service technician, and to us - your source of accurate and authentic servicing data.

During this period there has been no chance to "rest on the oars" and catch our breath. In rapid succession, we have seen the following developments appear, to "bedevil" an already complex picture:

1. New FM Circuitry. Introduction of the ratio detector, which combines the action of the discriminator and the limiter in one circuit, has required the development of new alignment techniques. In this instance, our close contact with the service field indicated that an alignment method using a sweep generator and oscilloscope, while undoubtedly desirable, would have to be supplemented by an alternative method using more widely available service equipment. Our answer was to provide both "sweep and scope" and signal generator - V. T. V. M. alignment procedures in all folders covering FM receivers. Our established policy of actually performing the receiver alignment before writing the notes, made the development of these methods, as well as the schematic and pictorial indication of instrument connection points, a practical possibility.

Other FM circuit developments which required our investigation to help you in servicing were: trick input tuning systems, Fremodyne converters, dual channel IF systems and the use of grounded grid RF amplifiers.

2. Wire and Tape Recorders. On the heels of the FM circuit "avalanche" came the introduction to the home radio field of a World War 2 development - the magnetic recorder.

Here, for the first time, was a device in which mechanical and electrical features were so closely inter-related that we had to devise a new method of presentation. Up to that time, record changers and radio equipment had been handled by separate divisions of our organization. In this case, however, a closer method of operation had to be developed. The results, after much experimentation, were the combined folders on such equipment as the St. George, Crescent and Wire-Way wire recorders and the Brush tape recorders.

The second edition of the Howard W. Sams' Record Changer Manual (CM-2) has many examples of magnetic recorders and serves to keep you current on this important new home entertainment device.

3. Microgroove Recording and Multi-speed Record Changers. The presentation to the industry of long playing records of slower speeds (33-1/3 and 45 RPM) has been followed by frenzied activity of the record changer manufacturers. This "burning of the midnight oil" over design boards and in the model shops resulted, in a remarkably short time interval, in the offering of dual speed (78 and 33-1/3 RPM) changers by three manufacturers. The second edition of the Changer Manual (CM-2) which was just going to press at the time, was temporarily held up and our own record changer analysis group went into "high gear". As a result the new manual is up-to-date and contains complete information on four different dual speed changers.

The new RCA changer (45 RPM), announced to the public April lst, will be covered in a supplement available to all technician owners of CM-2.

The ingenuity of the changer manufacturers has already found at least two answers to the three speed problem, and you can be assured that when the industry "shifts gears" to second speed, as well as low and high, we will provide you with the "know how" to keep the "gadget" running.

4. Television. The foregoing developments in the industry, while each brought its own problems, were minor compared with the "cataclysm" caused by the coming of age of television. In line with our established policy of "proving by doing", a year of experimentation preceded the introduction of the first TELEVISION PHOTOFACT FOLDER. The experience gained in the actual use of these folders in our own clinical operations has resulted in such improvements as larger schematics and double page under-chassis views repeated for different components, providing simplified reference and more rapid identification of parts.

As we review these examples of keeping in step with a rapidly expanding art, we feel proud of our "baby" on its third birthday. It is our hope that on future birthdays we can be just as proud of our success in meeting new innovations in the industry as we are today.

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT FOLDER Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

* * *

PHILCO 48-250, 48-250-1
Photofact Set 32, Folder 17

Complaint: Sets will only "light up" or play part of the time, or receivers quit playing after a few weeks' use.
Cause: In each case we have found the cause to be in the 50A5 output tubes. Some of these tubes will even check O. K. in the tester but will not operate in the set.
Remedy: We have found that inserting a series resistor of 75 to 100 ohms in the filament circuit (from pin 8 of the 7A8 to pin 8 of the 14A7) will protect the tubes during the voltage surge when the set is first turned on. We believe that it pays to add this resistor in all sets using the 50A5 tube, if the resistor was not included in the original design.

Submitted by: (Miss) Mildred Brown,
Manager and Technician,
Brown's Radio Service,
8 West Main Street,
Hartford, Mich.

* * *

CHEVROLET 986241
Photofact Set 58, Folder 7

Complaint: Set continues to blow fuses.
Cause: Vibrator and buffer condenser check O. K. Removing speaker from power pack section disclosed that the wire running from the vibrator to the power transformer, under

the speaker, was shorting against the speaker, due to the closeness of spacing.
Remedy: Insulate the wire with spaghetti tubing and receiver will be normally operative.

Submitted by: George W. Koustenis,
Barry-Pate Motor Co., Inc.,
1130 Connecticut Ave., N. W.
Washington 6, D. C.

* * *

BUICK 980 798
Photofact Set 59, Folder 6

Complaint: Intermittent operation. This receiver would operate by tapping it or by removing the 6SR7 tube and replacing.
Cause: Careful checking revealed that the 1500 ohm AF cathode resistor had a poor solder connection to ground.
Remedy: Resolder.

Submitted by: W. B. Fahey,
Stissing Electrical Shop,
Pine Plains, New York

* * *

PHILCO 49-1405
Photofact Set 54, Folder 24

Complaint: Phono will not operate, but radio operates normally.
Cause: Inspection revealed that the phono input leads were not connected to the terminal strip under the phono turntable. Inspection of several units in this area revealed that quite a few receivers had this difficulty.
Remedy: Solder phono input leads to terminal strip.

Submitted by: B. W. Ketker,
Sound Engineering Co.,
Tooele, Utah

* * *

VM RECORD CHANGER Model 400
Photofact Set 26, Folder 33

Complaint: Record pusher and spindle pusher assembly, Items 4 and 19, fall out of record changer. Or,
Complaint (different, but has same remedy): Changer fails to drop records and may repeat any record - not always the last one.

1. Bend pusher shaft (19A) toward record support (2) as far as you can without making it rub the record pusher (4) after the pusher assembly is pushed upward engaging the record pusher as far up as it will go.

2. Remove the pusher shaft spring (19B) to relieve the stress on the assembly and put the assembly together again. Now move the parts to and fro, looking and feeling for friction. See that the record pusher (4) has clearance between it and the sides of the spindle slot. See that the end of the wire in the ear on the pusher spring (4A) does not dig into and scratch the record pusher (4). If the record pusher does not have clearance with the sides of the slot, avoid marking the pusher when you bend it, but it is easy to bend. If you have to fix the end of the pusher spring, it may be removed by poking it down inside the spindle with a toothpick and out the bottom. It may be replaced by putting it on the pusher shaft (19A) and gently putting the two parts back into the spindle. After these things have been checked,

3. Replace pusher shaft spring (19B) and put everything together. Get a bit of vaseline (obtainable at drug stores) about as big as a flea, on the end of a piece of wire or a sharp pencil point and rub it in the middle of the groove in the record pusher (4) to reduce friction between it and the pin.

After each record drop, the record pusher (4) should slide on the ear on the pusher spring (4A), rotate or pivot around the pine, and fall over toward the pickup arm(6).

This service procedure is double-checked by operating the changer when it is cold.

Submitted by: Fred McKenzie,
Radio Technician,
McKenzie Home Appliance Co.,
Wallowa, Oregon

* * *

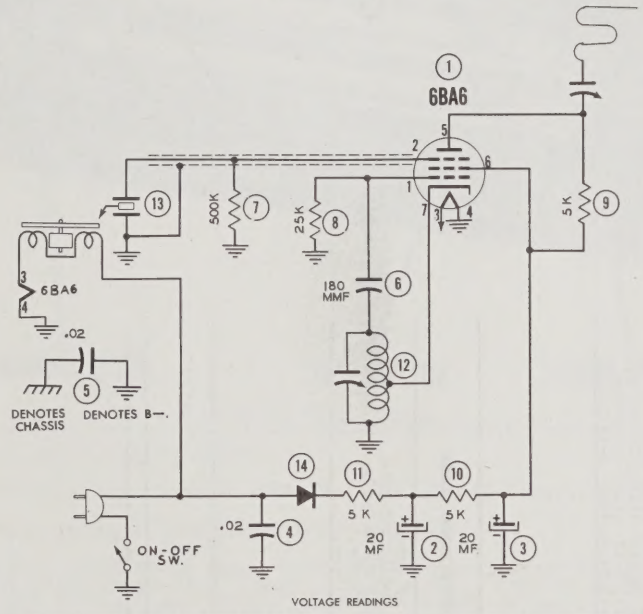
PHILCO M4 RECORD CHANGER
Photofact Set 25, Folder 30

Complaint: Tripping too soon or no reject.
Cause: The trip pawl rubber bumper (item 50-A) splits, due to wear and will fall out of trip arm assembly, resulting in prior tripping. This part is so small that its omission may not be noticed.
Remedy: Replace rubber bumper with new unit.

Submitted by: Tom King,
King's Radio Shop,
Box 34, Locke, California

AIRCASTLE MODEL WRA-4M

TRADE NAME	Aircastle, Model WRA-4M
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois.
TYPE SET	AC Operated Wireless Record Player.
TUBES (ONE)	Type 6BA6 Oscillator.
POWER SUPPLY	110-120 Volts AC RATING .36 Amp. @ 117 Volts AC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BA6	§-14.5VDC	-.6VDC	7.5VAC	0V	50VDC	55VDC	0V

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BA6	25KΩ	500KΩ	4.5Ω	0Ω	130KΩ	125KΩ	0Ω

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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498-1

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of + 15% in voltage and resistance readings.
6 - No signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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AIRCASTLE
MODEL WRA-4M

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIRCASTLE PART No.	STANDARD REPLACEMENT		
1	Oscillator	6BA6	6BA6	7BK	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
2	20	150	C-750	PRS150-20	BR2015		M-20-150	UT-201	Filter.
3	20	150	C-750	PRS150-20	BR2015		M-20-150	UT-201	Filter.
4	.02	600	C-751	684-02	GT6S2		ST-6-02	TC-12	Line Filter.
5	.02	600	C-751	684-02	GT6S2		ST-6-02	TC-12	Line Isolation.
6	180	500	C-752	1468-0002	5W5T2	GP2K-150	MO.5-32	1FM-32	Osc. Grid Cap.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	AIRCASTLE PART No.	IRC PART No.		
7	500KΩ	½	R-773	BTS-470K	Grn.-Blk.-Yl.	AF Grid.
8	25KΩ	½	R-772	BTS-27K	Red-Grn.-Or.	Oscillator Grid.
9	5KΩ	½	R-771	BTS-4700	Grn.-Blk.-Red.	AF Plate Load.
10	5KΩ	1		BTA-4700	Grn.-Blk.-Red.	Filter.
11	5KΩ	1		BTA-4700	Grn.-Blk.-Red.	Filter.

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	
12	Osc. Coil.		14Ω	A-800		

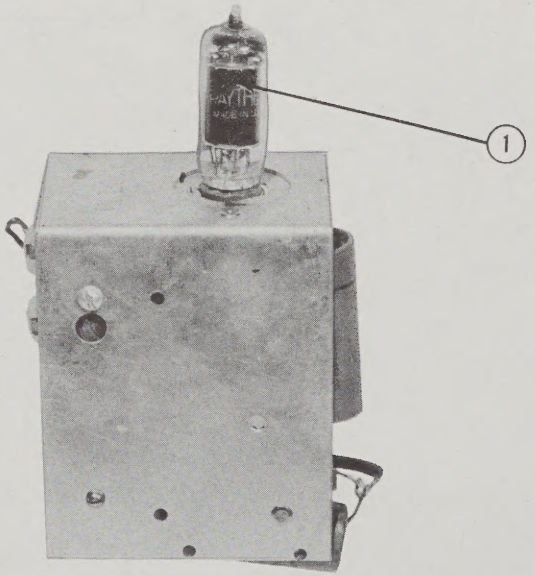
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	AIRCASTLE PART No.	ASTATIC PART No.	
13		L-70	

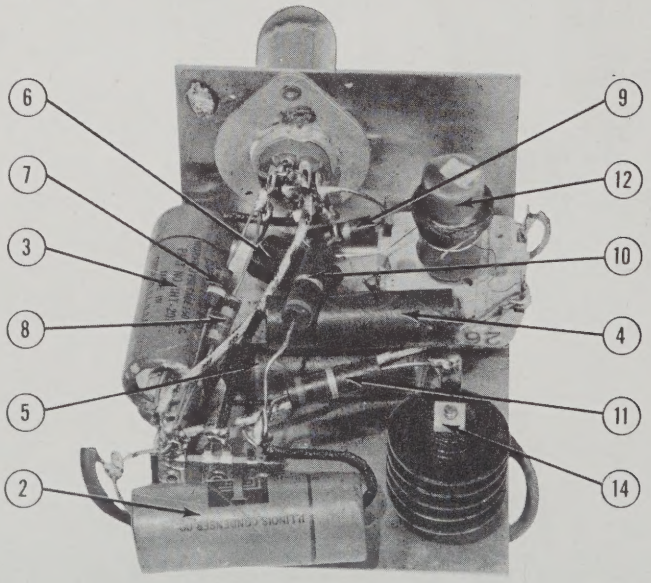
MISCELLANEOUS

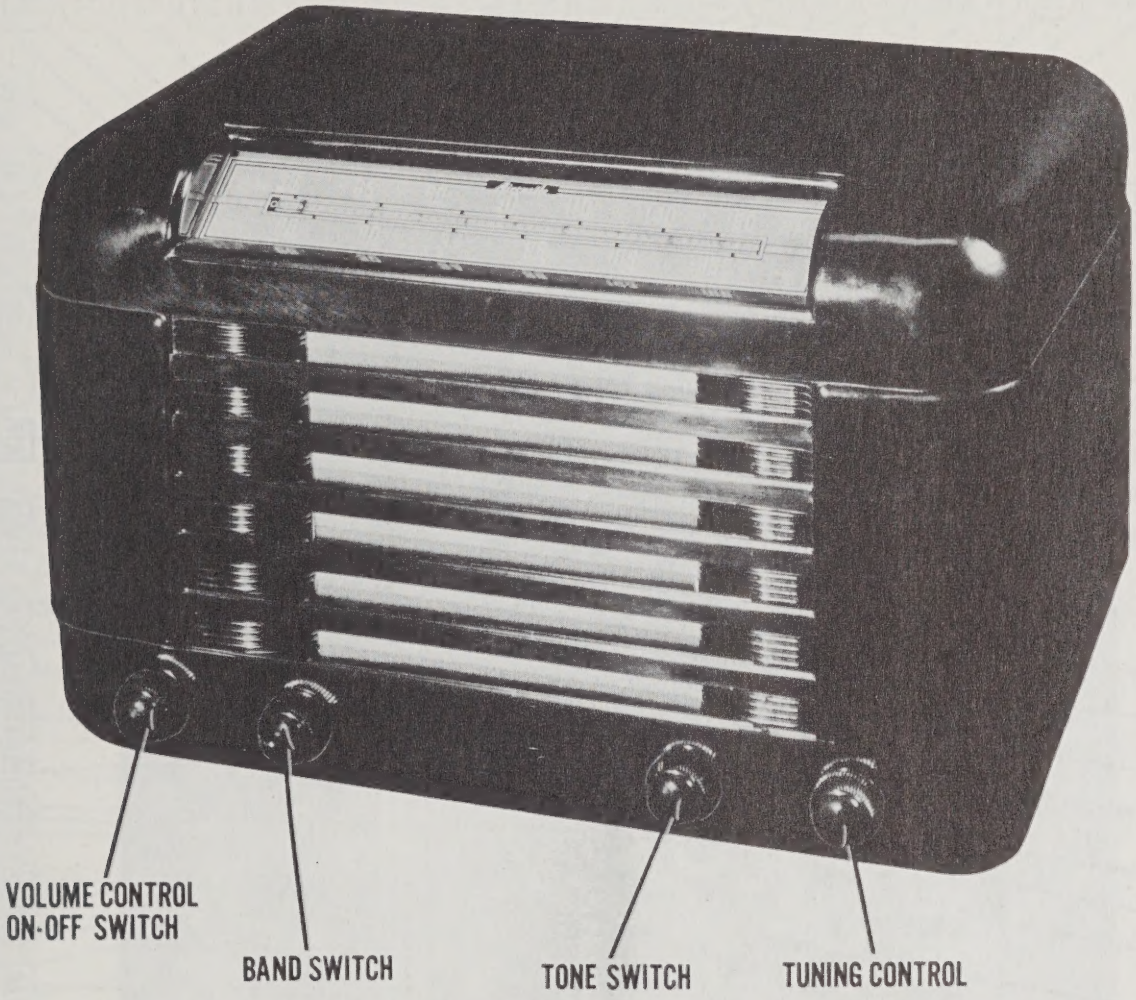
ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
14	Rectifier Case	A-801 A-805	Selenium.

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





AIRCASTLE
MODEL 131504

AIRCASTLE MODEL 131504

TRADE NAME	Aircastle, Model 131504
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago, Illinois
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver
TUBES (TEN)	Types, 12BA6 FM RF Amp., 12BE6 FM Converter, 12BA6 FM 1st IF Amp., 12BA6 FM 2nd IF Amp., 12BA6 FM 3rd IF Amp., 6AL5 FM Ratio Det., 12BE6 AM Converter, 12BA6 AM IF Amp., 12AT6 AM Det.-AVC-AF, 50L6GT Power Output.
POWER SUPPLY	110-120 Volts AC-DC
RATING	.453 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 7 Indiana

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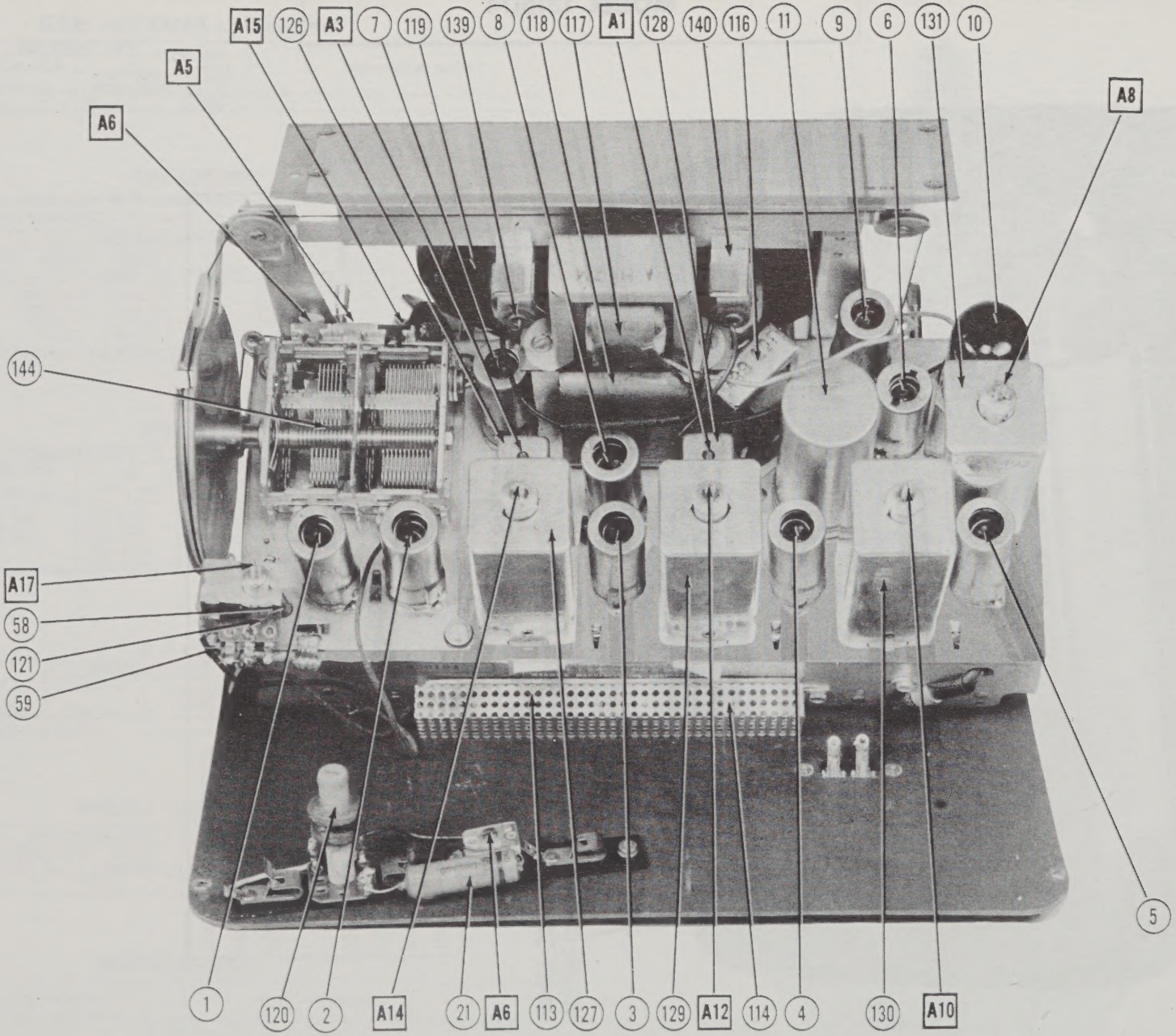
DATE 4/49 498-2 SET #60 FOLDER #2


A15
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	12BA6	12BA6	7BK	
2	FM Converter	12BE6	12BE6	7CH	
3	FM 1st IF Amp.	12BA6	12BA6	7BK	
4	FM 2nd IF Amp.	12BA6	12BA6	7BK	
5	FM 3rd IF Amp.	12BA6	12BA6	7BK	
6	FM Ratio Det.	6AL5	6AL5	6BT	
7	AM Converter	12BE6	12BE6	7CH	
8	AM IF	12BA6	12BA6	7BK	
9	AM Det.-AVC-AF	12AT6	12AT6	7BT	
10	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	40	300	A18-284	AF888D	UP4445		DY-419 *	EL-432*	■ Filter.
B	40	300							◓ Filter.
C	40	150			BR4015				▲ Filter.
12	4	150	A18-273	PRS150/4	BR415		M-8-150	UT-41	Stabalizing Capacitor.
13	.05	400	A16-158	484-05	GT4S5		ST-4-05	TC-15	Line Filter.
14	.005	600	A16-153	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Output Plate Bypass.
15	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Tone Compensation.
16	.05	400	A16-158	484-05	GT4S5		ST-4-05	TC-15	" "
17	.005	600	A16-153	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Audio Coupling.
18	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	RF Bypass Pwr. Supply.
19	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Audio Coupling.
20	.05	400	A16-158	484-05	GT4S5		ST-4-05	TC-15	AVC Filter.
21	.05	400	A16-158	484-05	GT4S5		ST-4-05	TC-15	Ext. Ant. Isolation.
22	.002	200	A16-178	484-002	GT4D2	GP2M-002	ST-6-002	TC-22	Audio Coupling.
23	.02	400	A16-150	484-02	GT4S2		ST-4-02	TC-12	Tone Compensation.
24	.1	200	A16-157	484-.1	GT2P1		ST-2-1	TC-1	AVC Filter.
25	.003	200	A16-180	484-003	GT6D3	GP2M-003	ST-6-003	TC-23	De-emphasis.
26	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	3rd FM IF Cath. Bypass.
27	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	RF Bypass Pwr. Supply.
28	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	2nd FM IF Cath. Bypass.
29	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	RF Bypass Pwr. Supply.
30	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	1st FM IF Cath. Bypass.
31	.01	400	A16-156	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	RF Bypass Pwr. Supply.
32	100	300	A15-196	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass.
33	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AF Plate Decoupling.
34	250		A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode RF Filter.
35	5			1469-00000	5R5V5	NPOK-5	MOS.5-55	MS-55	Fixed Trimmer.
36	50		A15-191	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	AM Osc. Grid Cap.
37	50		A15-191	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling.
38	250		A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	RF Bypass.
39	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	3rd FM IF Plate Decoup.
40	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	3rd FM IF Screen Bypass.
41	470		A15-200	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	3rd FM IF Grid Filter.
42	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd FM IF Plate Decoup.
43	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd FM IF Cath. Bypass.
44	470		A15-200	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	AVC Filter.
45	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st FM IF Plate Decoup.
46	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st FM IF Screen Bypass.
47	470		A15-200	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	AVC Filter.
48	20		A15-193		5R5Q2	NPOK-20	MOS.5-42	MS-42	FM Conv. Plate Bypass.
49	5000		A16-177	1467-005	1D5D5	GP2M-005	MW .5-25	1FM-25	FM Conv. Plate Decoup.
50	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	FM Conv. Screen Bypass.
51	50		A15-191	1469-00005	5R5Q5	NPOM-50	MOS.5-45	MS-45	Fixed Pad.
52	10		A15-197	1468-00001	5W5Q1	GP1K-10	MO.5-41	MS-41	FM Osc. Grid Cap.
53	20		A15-198		5W5Q2	GP1K-25	MO.5-42	MS-42	RF Coupling.
54	75		A15-195	1469-000075		NPOM-75		1FM-475	Fixed Pad.
55	20		A15-198		5W5Q2	GP1K-25	MO.5-42	MS-42	RF Coupling.
56	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Screen Bypass.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
106	10 Meg.	½	A60-728	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
107	270KΩ	½	A60-747	BTS-270K	Red-Vi.-Yl. AF Plate Load
108	270KΩ	½	A60-747	BTS-270K	Red-Vi.-Yl. AF Plate Decoup.
109	2.2 Meg.	½	A60-736	BTS-2.2 Meg.	Red-Red-Grn. Bias Network
110	470KΩ	½	A60-731	BTS-470K	Yl.-Vi.-Yl. Output Grid
111	150Ω	1	A60-741	BW-1-150	Br.-Grn.-Br. Output Cathode
112	12KΩ	1	A60-751	BTA-12K	Br.-Red-Or. Output Cathode Dropping
113	100Ω	1	A60-755	BW-1-100	Br.-Blk.-Br. Filter
114			A60-734		Line Dropping-See Note
115			A60-735		" " "
116	15Ω	3	A60-778		Br.-Grn.-Blk. Surge Limiter

Note-Special compensating resistors. Do not use ordinary replacements.

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: AIRCASTLE PART NO.	REPLACEMENT DATA: STANCOR PART NO.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
116	111 MA.	166Ω	4.5 Henries	A33-225				

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
117	4000Ω	3.2Ω	600Ω	.6Ω	A60-234	A-3852	RO-303	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	VC IMP.		ST-110#		#Trim flange.
118	PM	3.2Ω	B79-354	Mod. P6-V	6A21†	†Drill and tap magnet frame.
	CONE DIA.	VC DIA.				
119	6"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: MEISSNER PART No.
120	BC Ant. Coil	2.7Ω	57Ω	A10-507	
121	FM " "	.2Ω	.2Ω	SB10-488	14-1056
122	FM Plate Choke		.6Ω	A33-226	
123	FM RF Coil		0Ω	B10-489	
124	BC Osc. Coil	.9Ω	5.2Ω	B10-491	14-1060
125	FM " "		0Ω	B10-490	
126	AM 1st IF	17.3Ω	20Ω	A10-499	16-6678
127	FM 1st IF	.2Ω	.1Ω	SA10-493	
128	AM 2nd IF	15.8Ω	16.7Ω	A10-500	16-6678
129	FM 2nd IF	.6Ω	.1Ω	SC10-494	
130	FM 3rd IF	.6Ω	.1Ω	SC10-494	
131	FM Ratio Det.	1.5Ω	.3Ω	SC10-492	
132	Filament Chk.		.6Ω	A33-226	
133	" "		.6Ω	A33-226	
134	" "		.6Ω	A33-226	
135	" "		.6Ω	A33-226	
136	" "		.6Ω	A33-226	
137	" "		.6Ω	A33-226	
138	" "		.1Ω	A33-227	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AIRCASTLE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
57	470		A15-200	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Cath. Bypass.
58	50		A15-191	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Coupling.
59	50		A15-191	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Bypass.
60	5000		A16-177	1467-005	1D5D5		MW.5-25	1FM-25	Line Filter.
61	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
62	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
63	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
64	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
65	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
66	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
67	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
68	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
69	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass.
70	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
71	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
72	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
73	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
74	5000		A16-177	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.

*Omit bypass section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
75A	1 Meg.	2	B24-173	D13-137X	AT-106	Volume Control tapped @ 300KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 75A per instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
76	1 Meg.	½	A60-688	BTS-1 Meg.	Br.-Blk.-Grn. FM RF Grid
77	68Ω	½	A60-742		Blue-Gray-Blk. FM RF Cathode
78	100Ω	½	A60-743		Br.-Blk.-Br. FM RF Screen
79	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. FM Conv. Grid
80	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. FM Osc. Grid
81	100Ω	½	A60-743		Br.-Blk.-Br. FM Conv. Screen
82	100Ω	½	A60-743		Br.-Blk.-Br. FM Conv. Plate Decoup.
83	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
84	68Ω	½	A60-742		Blue-Gray-Blk. FM 1st IF Cathode
85	100Ω	½	A60-743		Br.-Blk.-Br. FM 1st IF Screen
86	100Ω	½	A60-743		Br.-Blk.-Br. FM 1st IF Plate Decoup.
87	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
88	68Ω	½	A60-742		Blue-Gray-Blk. FM 2nd IF Cathode
89	100Ω	½	A60-743		Br.-Blk.-Br. FM 2nd IF Screen
90	100Ω	½	A60-743		Br.-Blk.-Br. FM 2nd IF Plate Decoup.
91	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. FM 3rd IF Grid
92	68Ω	½	A60-742		Blue-Gray-Blk. FM 3rd IF Cathode
93	100Ω	½	A60-743		Br.-Blk.-Br. FM 3rd IF Screen
94	100Ω	½	A60-743		Br.-Blk.-Br. FM 3rd IF Plate Decoupling
95	270Ω	½	A60-723		Red-Vi.-Br. RF Filter
96	27KΩ	½	A60-745	BTS-27K	Red-Vi.-Or. De-emphasis
97	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. FM Det. Load
98	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. AVC Network
99	33KΩ	½	A60-748	BTS-33K	Or.-Or.-Or. Tone Comp.
100	1 Meg.	½	A60-688	BTS-1 Meg.	Br.-Blk.-Grn. AM Conv. Grid
101	22KΩ	½	A60-744	BTS-22K	Red-Red-Or. AM Osc. Grid
102	68Ω	½	A60-742	BW-½-68	Blue-Gray-Blk. AM IF Cathode
103	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
104	470KΩ	½	A60-731	BTS-470K	Yl.-Vi.-Yl. Diode Load

DATE 4/49 498-2 SET #60 FOLDER #2

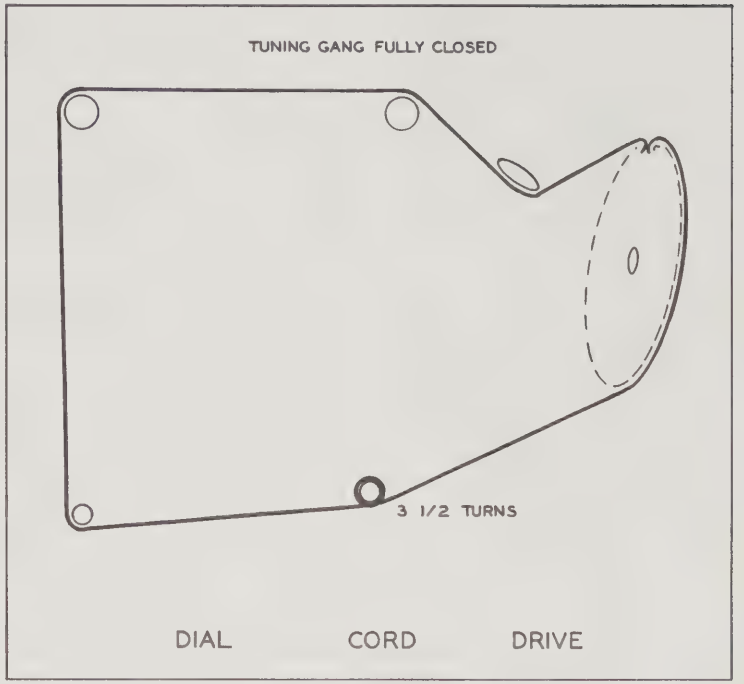
PARTS LIST AND DESCRIPTIONS (Continued)

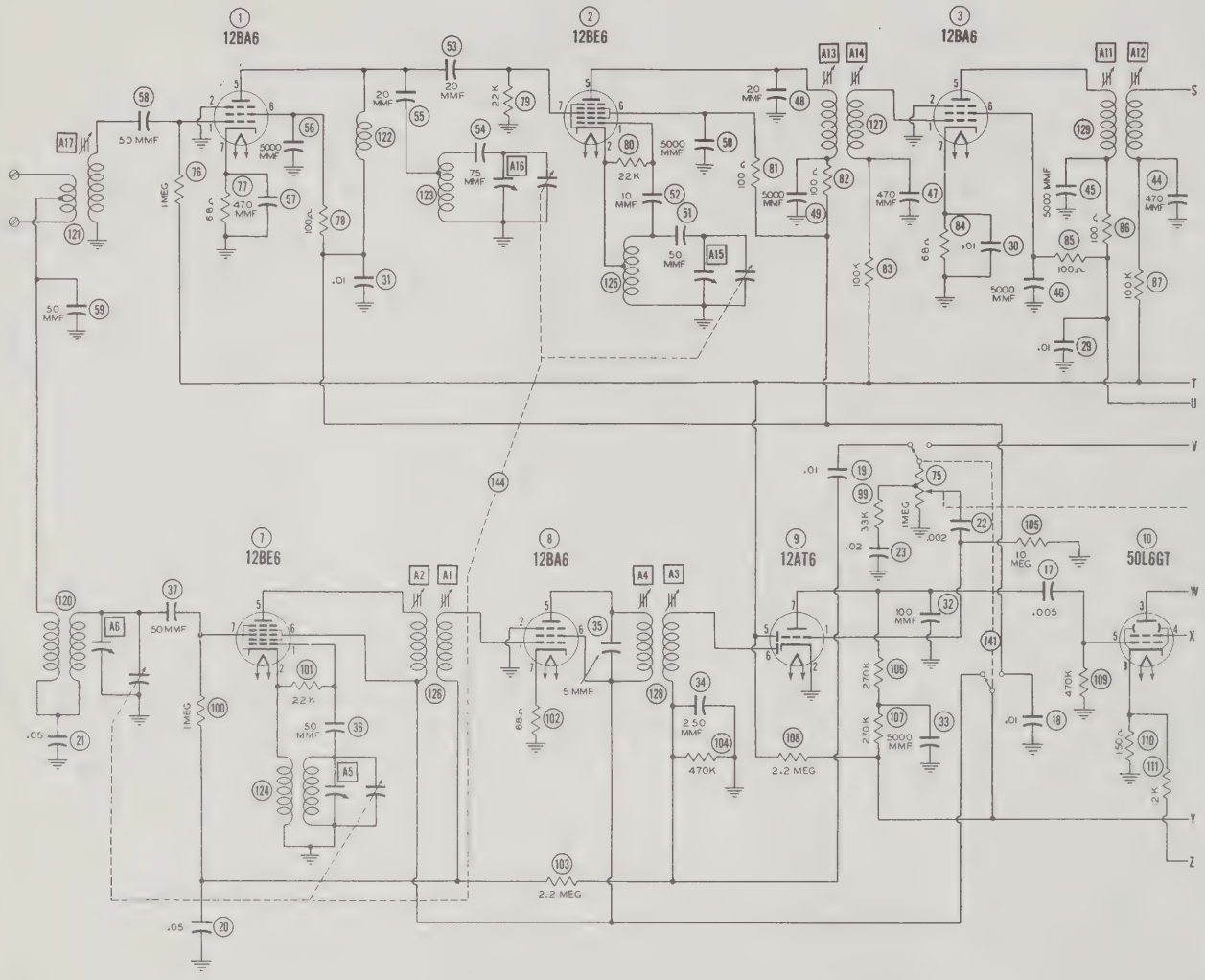
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIRCASTLE PART No.		INSTALLATION NOTES
139	Bayonet	6-8	0.15	Brown			Type 47
140	"	6-8	0.15	"			" "

MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
141	Switch	A69-181	Band
142	"	A26-125	Tone
143	Rectifier	A83-463	Selenium (150 MA)
144	Tuning Gang	C19-191	AM (30-535MMF, 40-220MMF)
A5	Trimmer Strip	A20-144	BC Osc. Adj.
A15			FM Osc. Adj.
A16			FM RF Adj.
A6	Trimmer	A20-139	BC Ant. Adj.
	Cabinet	D42-379	
	Dial Scale	667-534	
	Dial Pointer	A58-65	
	Knob	A52-279	





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	12BA6	-.3VDC	0V.	44VAC	31.5VAC	95VDC	95VDC	.9VDC	-
‡ 2	12BE6	-2.2VDC§	0V.	17.6VAC	6.4VAC	95VDC	95VDC	-.6VDC	-
‡ 3	12BA6	0V.	0V.	44.5VAC	54VAC	93VDC	95VDC	1VDC	-
‡ 4	12BA6	0V.	0V.	55VAC	68VAC	93VDC	95VDC	.9VDC	-
‡ 5	12BA6	0V.	0V.	18VAC	30VAC	95VDC	95VDC	1VDC	-
‡ 6	6AL5	0V.	-4.6VDC	0V.	6.2VAC	-11VDC	0V.	-.1VDC	-
7	12BE6	-12VDC§	0V.	31VAC	19VAC	97VDC	97VDC	0V.	-
8	12BA6	0V.	0V.	82VAC	68VAC	97VDC	97VDC	.6VDC	-
9	12AT6	-.5VDC	0V.	19VAC	6.4VAC	-.3VDC	0V.	42VDC	-
10	50L6	0V.	30VAC	83VDC	97VDC	0V.	76VDC	78VAC	6VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	12BA6	1.1 Meg.	[illegible]	[illegible]	[illegible]	1.[illegible]Ω	1.[illegible]Ω	[illegible]	-
‡ 2	12BE6	22KΩ	[illegible]	1[illegible]	4[illegible]	1.[illegible]Ω	1.[illegible]Ω	[illegible]	-
‡ 3	12BA6	220KΩ	[illegible]	[illegible]	[illegible]	1[illegible]	1.[illegible]Ω	[illegible]	-
‡ 4	12BA6	220KΩ	[illegible]	[illegible]	[illegible]	1.[illegible]Ω	1.[illegible]Ω	[illegible]	-
‡ 5	12BA6	100KΩ	[illegible]	1[illegible]	27[illegible]	1[illegible]Ω	1[illegible]Ω	[illegible]	-
‡ 6	6AL5	0Ω	[illegible]	[illegible]	7[illegible]	1[illegible]Ω	[illegible]Ω	[illegible]	-
7	12BE6	22KΩ	[illegible]Ω	27.4Ω	15.6Ω	12KΩ	12KΩ	[illegible]	-
8	12BA6	2.7 Meg.	0Ω	78Ω	65Ω	12KΩ	12KΩ	[illegible]	-
9	12AT6	10 Meg.	0Ω	16Ω	4Ω	470KΩ	120KΩ	[illegible]	-
10	50L6	INF.	27Ω	12KΩ	12KΩ	500KΩ	280KΩ	[illegible]	-

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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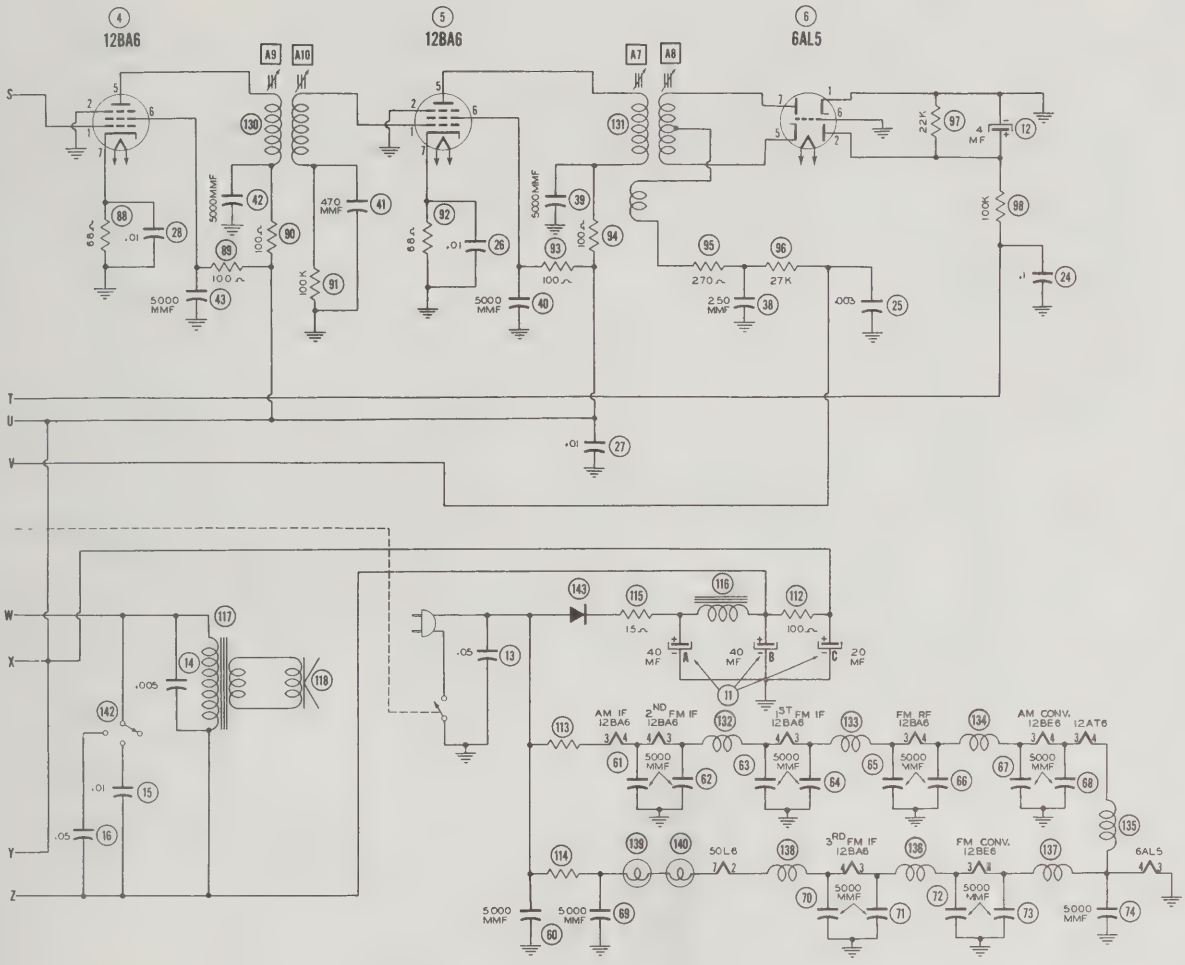

IF = 455 KC AM

IF = 10.7 MC FM

AIRCASTLE
MODEL 131504

PAGE 7

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with side of signal generator and chassis.

Use insulated alignment screwdriver for all adjustments

AM ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 7 (grid) of 12BE6 AM Conv. Tube (7). Low side to chassis.	455KC	BC (Clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	.2 MMFD	"	1500KC	"	"	"	A5	Adjust for maximum output
3	2 OHMS	High side to either dipole terminal. Low side to chassis.	1400KC	"	Tune for maximum output.	"	A6	" " " "

FM ALIGNMENT USING FM SIGNAL GENERATOR OSCILLOSCOPE & OUTPUT METER

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep with exception of RF alignment Steps 7, 8 & 9 where 400 ∿ modulation with 45KC sweep is used. Connect the synchronized sweep voltage from the sig. gen. to the horizontal input of scope. The horizontal sweep voltage may be taken from the power line if the sig. gen. does not have a sync. voltage output. There may be some phase shift encountered between sig. gen. and scope horizontal sweep. If provision is made for this in the scope rotate phase control until the two curves coincide. If no provision is made for this the same thing may be accomplished by inserting a cap. of suitable value (.01 to .1 MFD) in series with the horizontal sync. input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 1 (grid) of 12BA6 2nd FM IF Tube (4). Low side to chassis.	10.7MC (Freq. Mod.)	FM (Counter-Clockwise)	Tuning cap. fully open.	Vertical input to Point (A). Ground to chassis.	A7,A8	Alternately adjust A7 for maximum amplitude and A8 for maximum linearity of "S" curve with curve centered on horizontal scope sweep line per Fig. 1.
5	.1 MFD.	High side to Pin 1 (grid) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	Vertical input to Point (B). Ground to chassis.	A9,A10 A11,A12	Connect short from junction of cap. (24) and resistor (98) to chassis. Adjust for maximum amplitude and symmetry of pattern per Fig. 2 with pattern centered on horizontal scope sweep line.
6	.1 MFD.	High side to Pin 5 (plate) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum amplitude and symmetry of pattern per Fig. 3 with pattern centered on horizontal scope sweep line. Remove short from junction of resistor (98) and cap. (24) to chassis.
						OUTPUT METER		
7	2 -150Ω carbon res.	Each side in series with 150Ω resistor across dipole ant. terminals.	108MC (Freq. Modulated 400 ∿ mod. 45KC sweep)	FM	Tuning cap. fully open.	Across voice coil	A15	Adjust for maximum output
8	"	"	103MC	"	Tune for maximum output.	"	A16	" " " "
9	"	"	100MC	"	"	"	A17	" " " "

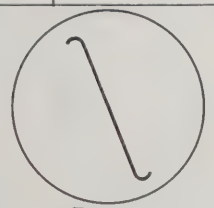


FIG. 1

FIG. 2

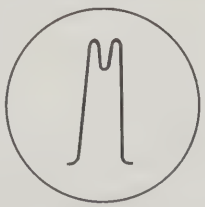


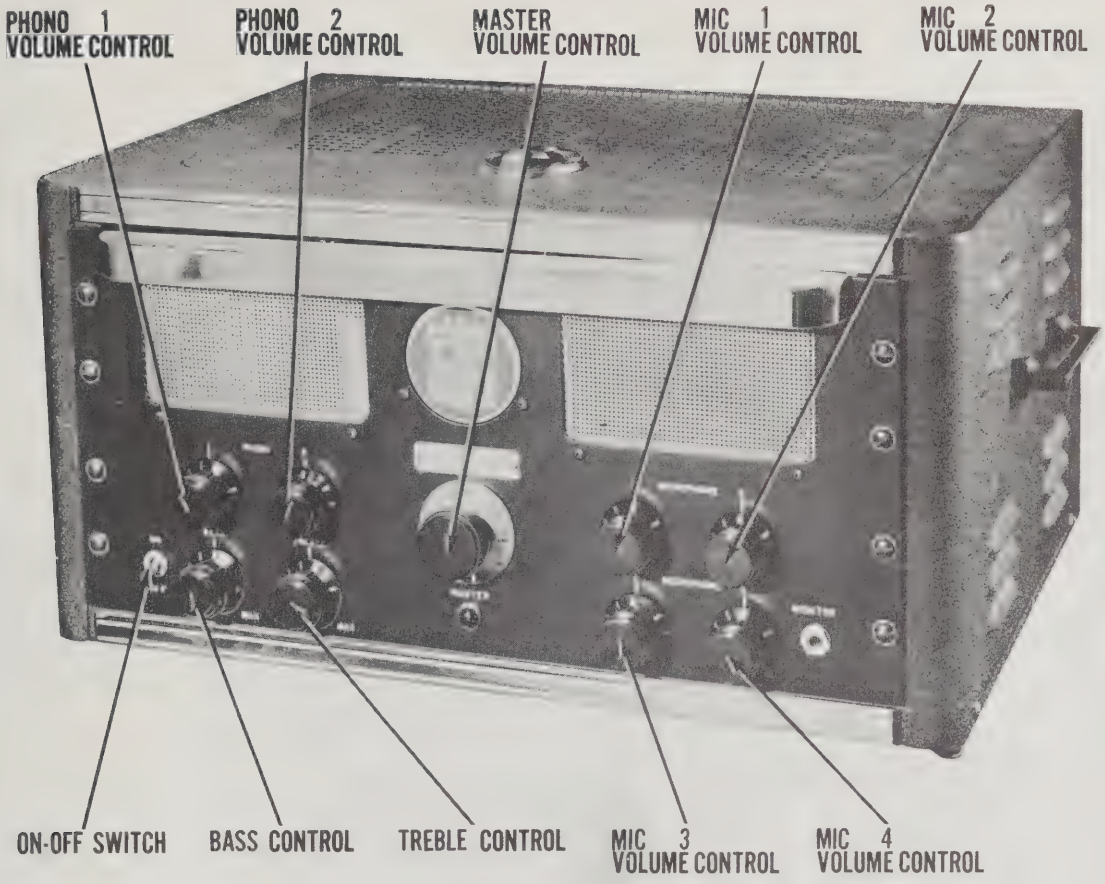
FIG. 3

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

For plotting discriminator curve, vary sig. gen. 100KC above and below 10.7MC in Steps of 20KC. Record readings of VTVM for each setting of sig. gen. and plot curve. If curve is not similar to Fig. 1 repeat adjustment of A7 and A8 and replot curve.

For plotting IF curve, vary sig. gen. 150KC above and below 10.7MC in Steps of 20KC. Record readings of VTVM for each setting of sig. gen. and plot curve. If curve is not similar to Fig. 2 or Fig. 3 repeat last adjustments and replot curve.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.1 MFD.	High side to Pin 1 (grid) of 12BA6 3rd FM IF Tube (5). Low side to chassis.	10.7MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point (B). Common to chassis	A7	Adjust for maximum deflection.
5	.1 MFD.	"	"	"	"	DC probe to Point (A). Common to chassis	A8	Adjust for zero deflection. Plot discriminator curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A7 or A8.
6	.1 MFD.	High side to Pin 1 (grid) of 12BA6 2nd FM IF Tube (4). Low side to chassis.	"	"	"	DC probe to Point (B). Common to chassis	A9,A10	Solder a shunt cap. of 100 MMFD across secondary of 3rd FM IF Transformer (131) and adjust A9 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A10 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A9 or A10. Remove shunt cap.
7	.1 MFD.	High side to Pin 1 (grid) of 12BA6 1st FM IF Tube (3). Low side to chassis.	"	"	"	"	A11, A12	Solder a shunt cap. of 100 MMFD across secondary of 2nd FM IF Transformer (130) and adjust A11 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A12 for maximum deflection. Plot IF curve per prealignment instructions. Once curve is satisfactory do not disturb adjustment of A11 or A12. Remove shunt cap.
8	.1 MFD.	High side to Pin 5 (plate) of 12BA6 FM RF Tube (1). Low side to chassis.	"	"	"	"	A13, A14	Solder a shunt cap. of 100 MMFD across secondary of 1st FM IF Transformer (127) and adjust A13 for maximum deflection. Transfer shunting cap. to primary of the same transformer and adjust A14 for maximum deflection. Plot IF curve per prealignment instruction. Once curve is satisfactory do not disturb adjustment of A13 and A14. Remove shunt cap.
9	2 -150Ω carbon res.	Each side in series with 150Ω resistor across dipole ant. terminals.	108MC (Unmodulated)	FM	Tuning cap. fully open.	DC probe to Point (B). Common to chassis	A15	Adjust for maximum deflection.
10	"	"	103MC	"	Tune for maximum deflection.	"	A16	Rock tuning cap. and adjust for maximum deflection.
11	"	"	100MC	"	"	"	A17	Adjust for maximum deflection.



AIRLINE, MODEL 74GSG-8700A

TRADE NAME Airline, Models 74GSG-8400A, 74GSG-8700A

SUPPLIER Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois

TYPE SET AC Operated 5 Channel Audio Amplifier

TUBES(TWENTY-TWO) Types 6SQ7 Mic. 1 Amp., 6SQ7 Mic. 2 Amp., 6SQ7 Mic. 3 Amp., 6SQ7 Mic. 4 Amp., 6SL7GT Mixer-Tone Control, 6J5 Driver, (6) 6V6GT Power Output, (2) 5Z4 Rectifier, (6) 6V6GT Power Output, (2) 5Z4 Rectifier

POWER SUPPLY 105-125 Volts AC RATING 3.1 Amp. @ 117 Volts AC

AIRLINE
MODELS 74GSG,
8400A, 74GSG, 8700A

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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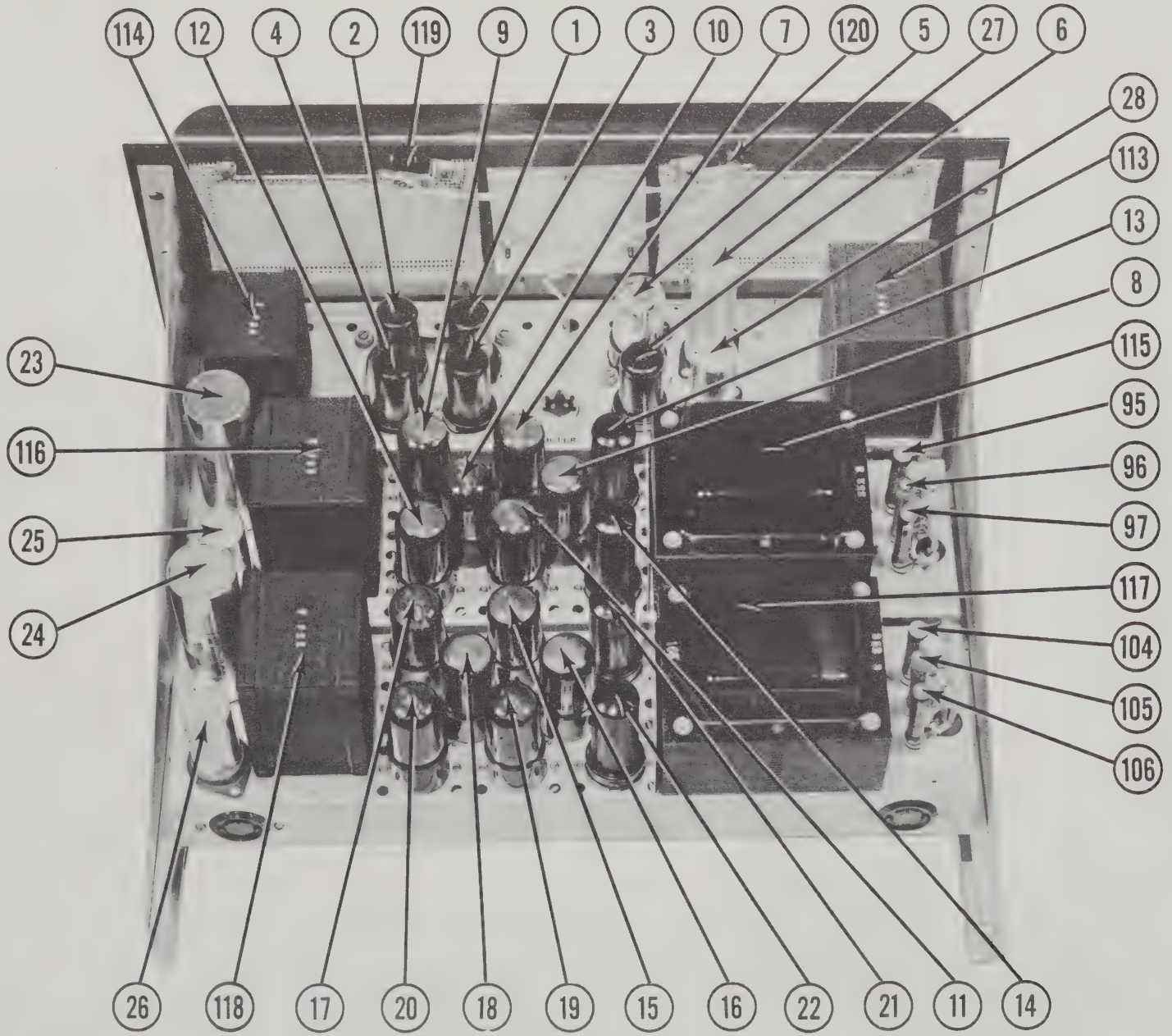
DATE 4/49 498-3 SET #60 FOLDER 3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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic #1 PreAmp.	6SQ7	6SQ7	8Q	
2	Mic #2 Preamp.	6SQ7	6SQ7	8Q	
3	Mic #3 Preamp.	6SQ7	6SQ7	8Q	
4	Mic #4 Preamp.	6SQ7	6SQ7	8Q	
5	Mixer-Tone Control.	6SL7GT	6SL7GT	8BD	
6	Driver	6J5	6J5	6Q	
7	Power Output	6V6GT	6V6GT	7AC	
8	Power Output	6V6GT	6V6GT	7AC	
9	Power Output	6V6GT	6V6GT	7AC	
10	Power Output	6V6GT	6V6GT	7AC	
11	Power Output	6V6GT	6V6GT	7AC	
12	Power Output	6V6GT	6V6GT	7AC	
13	Rectifier	5Z4	5Z4	5L	
14	Rectifier	5Z4	5Z4	5L	
15	Power Output	6V6GT	6V6GT	7AC	Used on Model 74GSG-8700A Only.
16	Power Output	6V6GT	6V6GT	7AC	" " " "
17	Power Output	6V6GT	6V6GT	7AC	" " " "
18	Power Output	6V6GT	6V6GT	7AC	" " " "
19	Power Output	6V6GT	6V6GT	7AC	" " " "
20	Power Output	6V6GT	6V6GT	7AC	" " " "
21	Rectifier	5Z4	5Z4	5L	" " " "
22	Rectifier	5Z4	5Z4	5L	" " " "

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
23	30	475	275-3065-1				DW-30-525	RW-25	Filter.
24	30	475	275-3065-1				DW-30-525	RW-25	Filter.
25A	10	450	285-3565-4	AF22J4A*	UP1045C		DY-10-450/25-50	EL-363*	■ Filter. ▲ Cathode Bypass.
B	20	25							
26A	10	450	285-3565-4	AF22J4A*	UP1045C		DY-10-450/25-50	EL-363*	■ Filter. ▲ Cathode Bypass.
B	20	25							
27A	10	450	285-3065-1	AF222J	UP11145		DY-3X10-450	EL-310	■ Decoupling. ▲ Decoupling.
B	10	450							
C	10	450							Decoupling.
28A	20	25	285-6061-2	AF444D	UP222-25		DY-3X20-25	EL-325	Driver Cathode Bypass. ■ Remote Gain Bypass. ▲ Mixer Cathode Bypass.
B	20	25							
C	20	25							
29A	20	25	*285-6061-2	AF44D	UP-2215		DY-2X20-25	EL-221	▲ Mic. Amp. #1 Cathode Bypass.
B	20	25							▲ Mic. Amp. #3 Cathode Bypass.
30A	20	25	*285-6061-2	AF44D	UP-2215		DY-2X20-25	EL-221	■ Mic. Amp. #2 Cathode Bypass.
B	20	25							Mic. Amp. #4 Cathode Bypass.
31	.01	400	263-1034-5	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Hash Filter.
32	.002	1600	263-2028-2	1684-002	GT16D2		STM-16-002	TR-22	Output Plate Bypass.
33	.002	1600	263-2028-2	1684-002	GT16D2		STM-16-002	TR-22	" " "
34	.1	400	263-1044-3	484-.1	GT4F1		ST-4-1	TC-1	Audio Coupling.
35	.01	400	263-1034-5	484-.01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
36	.01	400	263-1034-5	484-.01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
37	.01	400	263-1034-5	484-.01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
38	.01	400	263-1034-5	484-.01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
39	.01	400	263-1034-5	484-.01	GT4S1	GP2-335-01	ST-4-01	TC-11	Audio Coupling.
40	250	500	232-2515-2	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Tone Compensation.
41	250	500	232-2515-2	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	" "
42	250	500	232-2515-2	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	" "
43	250	500	232-2515-2	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	" "
44	750	500	232-7514-6	1467-00075	1W5T7	GP2K-750	MW.5-37	1FM-37	" "
45	4000	500	232-4024-9	1467-004	1D5D4		MW.5-24	1FM-24	" "
46	4000	500	232-4024-9	1467-004	1D5D4		MW.5-24	1FM-24	" "
47	750	500	232-7514-6	1467-00075	1W5T7	GP2K-750	MW.5-37	1FM-37	Tone Compensation.

* Omit Bypass section.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
107	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	Parasitic Suppressor
108	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
109	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
110	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
111	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
112	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "

Note: On IRC replacement set slide at 114Ω from one end.

TRANSFORMER (IMPEDENCE MATCHING)

ITEM No.	RATING: IMPEDANCE	RATING: DC RES.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
113	4Ω	.6Ω	334-2	A-3838#			# Drill new mounting holes.
	5.3Ω	.65Ω					
	8Ω	.7Ω					
	16Ω	1.2Ω					
	250Ω	10Ω					
	600Ω	17Ω					

TRANSFORMER (DRIVER)

ITEM No.	RATING: TURNS RATIO PRI. ½ SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
114	2.6 To 1	1800Ω CT	800Ω CT	334-1	A-4401#	PCD-25#	A-3124#	# Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
115	117VAC @ 1.5A	760VCT .19ADC	5.0VAC @ 4.0A	6.3VCT @ 4.6A	352-3	P-6165 †	PV-200 †	P-2955 †

† Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
116	3100Ω CT	8Ω 16Ω	120Ω CT	.4Ω .6Ω	334-5	A-3306#			# Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
117	117VAC @ 1.5A	760VCT .19ADC	5.0VAC @ 4.0A	6.3VCT @ 4.6A	352-3	P-6165 †	PV-200 †	P-2955 †

Used in 74GSG-8700A
† Add series resistor to reduce plate voltage.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	
48A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Mike 1 Control.
B	Shaft		Not Req	A	Not Req.	Attach to 48A per instructions.
49A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Mike 2 Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 49A per instructions.
50A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Mike 3 Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 50A per instructions.
51A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Mike 4 Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 51A per instructions.
52A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Phono 1 Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 52A per instructions.
53A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Phono 2 Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 53A per instructions.
54A	500KΩ	½	124-50413-1	D13-133	M-60-Z	Master Gain Control.
B	Shaft		Not Req.	A	Not Req.	Attach to 54A per instructions.
55	4 Meg.	½	125-40513-1			Bass Control.
56	4 Meg.	½	125-40513-1			Treble Control.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.		
57	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	1st Mic. Amp. Grid
58	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	2nd " " "
59	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	3rd " " "
60	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	4th " " "
61	3300Ω	½	111-33212	BTS-3300	Or.-Or.-Red	1st Mic. Amp. Cathode
62	3300Ω	½	111-33212	BTS-3300	Or.-Or.-Red	2nd " " "
63	3300Ω	½	111-33212	BTS-3300	Or.-Or.-Red	3rd " " "
64	3300Ω	½	111-33212	BTS-3300	Or.-Or.-Red	4th " " "
65	270KΩ	½	111-27412	BTS-270K	Red-Vi.-Yl.	1st Mic. Amp. Plate Load
66	270KΩ	½	111-27412	BTS-270K	Red-Vi.-Yl.	2nd " " " "
67	270KΩ	½	111-27412	BTS-270K	Red-Vi.-Yl.	3rd " " " "
68	270KΩ	½	111-27412	BTS-270K	Red-Vi.-Yl.	4th " " " "
69	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	Isolation
70	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	"
71	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	"
72	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	"
73	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	"
74	820KΩ	½	111-82412	BTS-820K	Gray-Red-Yl.	"
75	2.2 Meg.	½	111-22512	BTS-2.2 Meg.	Red-Red-Grn.	Voltage Dropping
76	2700Ω	½	111-27212	BTS-2700	Red-Vi.-Red	Mixer Cathode
77	150KΩ	½	111-15412	BTS-150K	Br.-Grn.-Yl.	Mixer Plate Load
78	390KΩ	½	111-39411	BTS-390K	Or.-White-Yl.	Tone Compensation
79	500KΩ	½	111-50412	BTS-470K	Grn.-Blk.-Yl.	" "
80	100KΩ	½	111-10412	BTS-100K	Br.-Blk.-Yl.	" "
81	2700Ω	½	111-27212	BTS-2700	Red-Vi.-Red	Tone Amp. Cathode
82	150KΩ	½	111-15412	BTS-150K	Br.-Grn.-Yl.	Tone Amp. Plate Load
93	240KΩ	½	111-24412	BTS-220K	Red-Yl.-Yl.	Tone Compensation
84	56KΩ	½	111-56312	BTS-56K	Grn.-Blue-Or.	" "
85	500KΩ	½	111-50412	BTS-470K	Grn.-Blk.-Yl.	" "
86	2700Ω	½	111-27212	BTS-2700	Red-Vi.-Red	Driver Cathode
87	27KΩ	½	111-27312	BTS-27K	Red-Vi.-Or.	Decoupling
88	10KΩ	1	111-10332	BTA-10K	Br.-Blk.-Or.	"
89	10KΩ	1	111-10332	BTA-10K	Br.-Blk.-Or.	"
90	50KΩ	½	111-50312	BTS-47K	Grn.-Blk.-Or.	Driver Transformer Shunt
91	50KΩ	½	111-50312	BTS-47K	Grn.-Blk.-Or.	" " "
92	18Ω	½	111-18012	BW-½-18	Br.-Gray-Blk.	Series Pilot Light
93	18Ω	½	111-18012	BW-½-18	Br.-Gray-Blk.	" " "
94	18Ω	½	111-18012	BW-½-18	Br.-Gray-Blk.	" " "
95	114Ω	10	151-11161	DHA-150		Output Cathode See Note
96	30KΩ	10	151-33361	DG-30K		Output Cathode Bias
97	5KΩ	10	151-50265	AB-5000		Filter
98	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	Parasitic Suppressor
99	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
100	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
101	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
102	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
103	1200Ω	½	111-12212	BTS-1200	Br.-Red-Red	" "
104	114Ω	10	151-11161	DHA-150		
105	30KΩ	10	151-33361	DG-30K		Output Cathode See Note
106	5KΩ	10	151-50265	AB-5000		Output Cathode Bias Filter

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

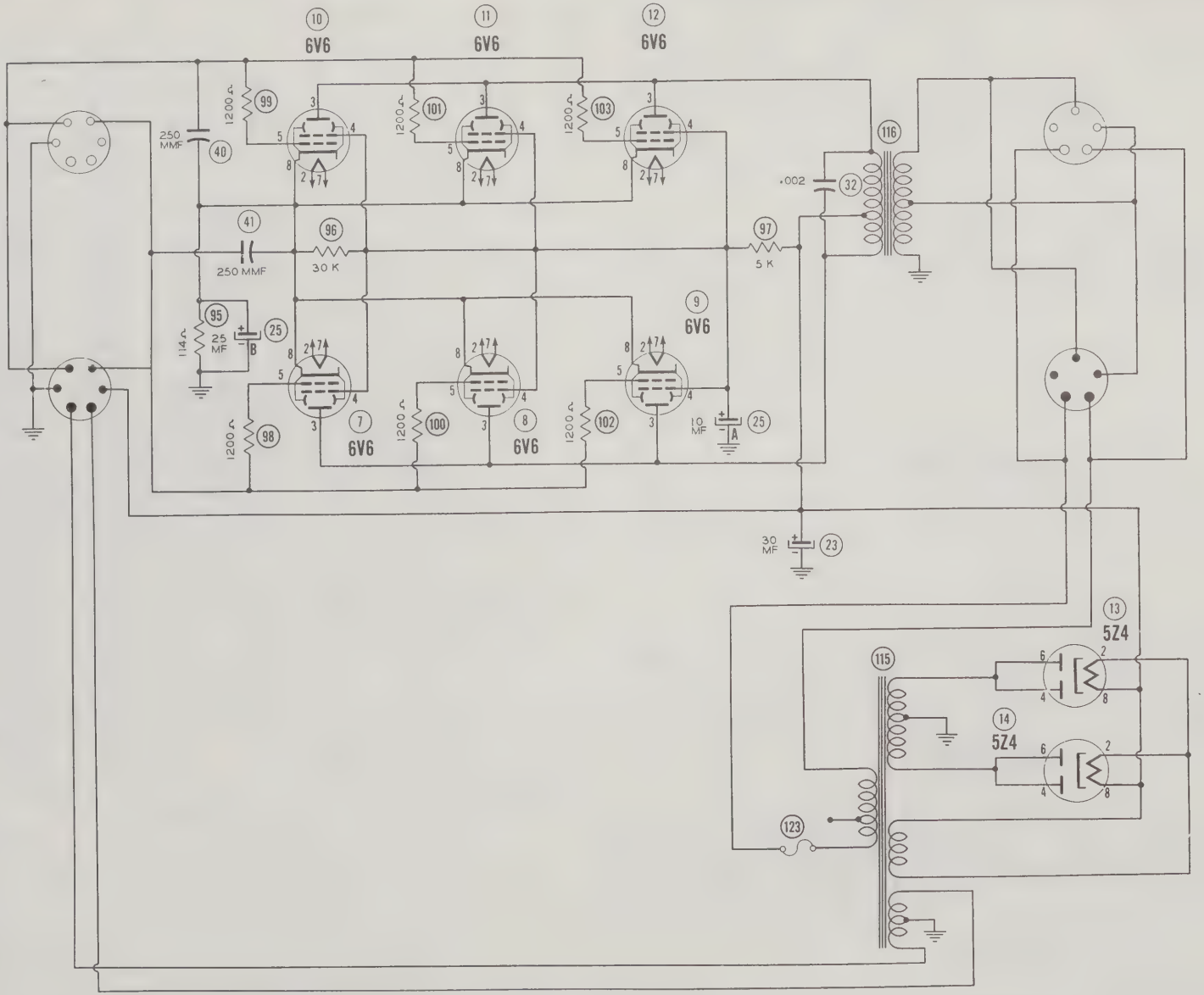
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
118	3100Ω CT	8Ω 16Ω	120Ω CT	.4Ω .6Ω	334-5	A-3306#			# Drill new mounting holes. Used in 74GSG-8700A

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRLINE PART No.		
119	Bayonet	6-8V	0.2A	Pink			Type #51
120	Bayonet	6-8V	0.2A	Pink			Type #51
121	Bayonet	6-8V	0.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
122	Switch	531A1	On-Off
123	Fuse	541-2	3 Amp.
124	Fuse	541-2	3 Amp.



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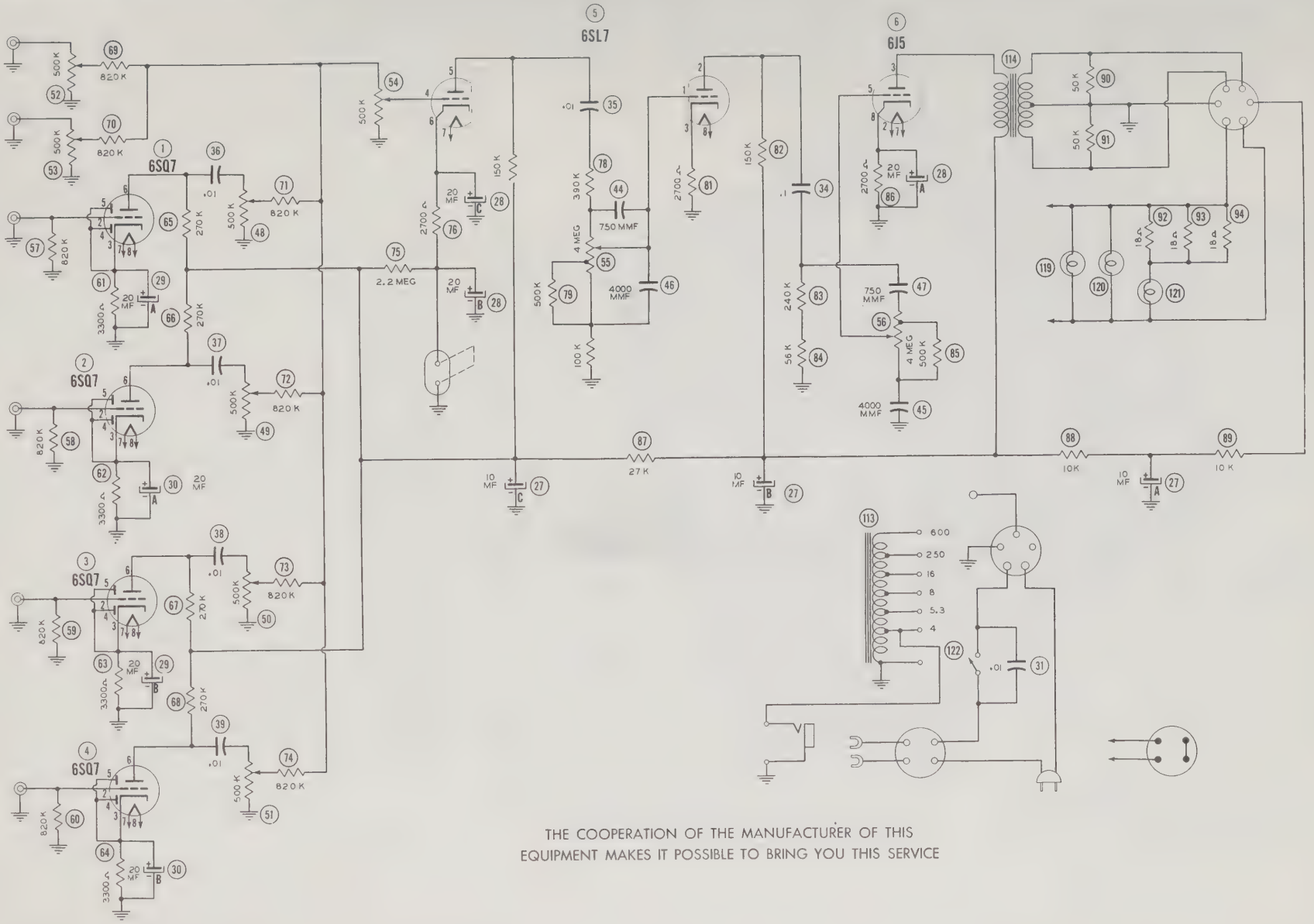

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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498-3

VOLTAGE READINGS

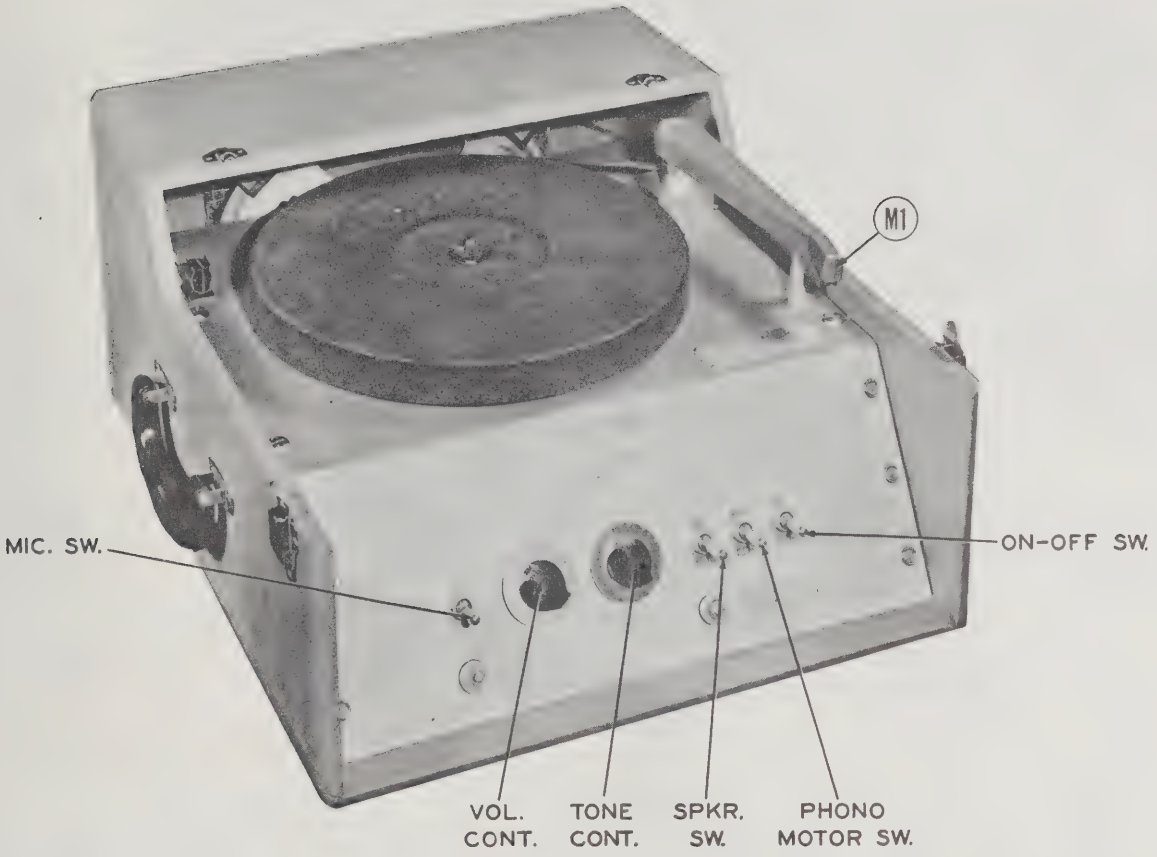
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0V	0V	1.3VDC	0V	0V	120VDC	3.2VAC	3.2VAC
2	6SQ7	0V	0V	1.3VDC	0V	0V	120VDC	3.2VAC	3.2VAC
3	6SQ7	0V	0V	1.3VDC	0V	0V	120VDC	3.2VAC	3.2VAC
4	6SQ7	0V	0V	1.3VDC	0V	0V	120VDC	3.2VAC	3.2VAC
5	6SL7GT	0V	165VDC	2VDC	0V	130VDC	1.7VDC	3.2VAC	3.2VAC
6	6J5	0V	3.2VAC	270VDC	430VDC	0V	350VDC	3.2VAC	24VDC
7	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
8	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
9	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
10	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
11	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
12	6V6GT	0V	3.2VAC	425VDC	320VDC	0V	0V	3.2VAC	24VDC
13	5Z4	0V	430VDC	0V	380VAC	0V	380VAC	0V	430VDC
14	5Z4	0V	430VDC	0V	380VAC	0V	380VAC	0V	430VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SQ7	0Ω	820KΩ	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
2	6SQ7	0Ω	820KΩ	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
3	6SQ7	0Ω	820KΩ	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
4	6SQ7	0Ω	820KΩ	3.3KΩ	0Ω	0Ω	360KΩ	.05Ω	.05Ω
5	6SL7GT	100KΩ	200KΩ	2.7KΩ	0Ω	220KΩ	2.7KΩ	.05Ω	.05Ω
6	6J5	0Ω	.05Ω	50KΩ	30KΩ	60KΩ	40KΩ	.05Ω	2.7KΩ
7	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	550Ω	.05Ω	114Ω
8	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	Inf.	.05Ω	114Ω
9	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	Inf.	.05Ω	114Ω
10	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	550Ω	.05Ω	114Ω
11	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	Inf.	.05Ω	114Ω
12	6V6GT	0Ω	.05Ω	30KΩ	35KΩ	2KΩ	Inf.	.05Ω	114Ω
13	5Z4	0Ω	30KΩ	Inf.	27Ω	Inf.	27Ω	Inf.	30KΩ
14	5Z4	0Ω	30KΩ	Inf.	30Ω	Inf.	30Ω	Inf.	30KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



ARTHUR ANSLEY
MODEL SP-1

ARTHUR ANSLEY MODEL SP-1

TRADE NAME	Arthur Ansley, Model SP-1
MANUFACTURER	Arthur Ansley Mfg. Co., Doylestown, Pa.
TYPE SET	AC Operated 2 Channel Audio Amplifier with Phono Player
TUBES(FOUR)	Types 6J5 Mic Pre. Amp., 6J5 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .40 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

ARTHUR ANSLEY
MODEL SP-1

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mic. Pre. Amp.	6J5	6J5	7BF	
V2	AF Amp.	6J5	6J5	7BF	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: A. ANSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450		AF44J	UP2245		DY-2X20-450	EL-220	Filter
B	20	450							"
C2A	20	450		AF44J	UP2245		DY-2X20-450	EL-220	"
B	20	450							"
C3	25	25		PRS25/25	BR252A		M-25-25	TA-25	Mic. Pre-Amp. Cath. Byp.
C4	25	25		PRS25/25	BR252A		M-25-25	TA-25	AF Cath. Bypass
C5	25	25		PRS25/25	BR252A		M-25-25	TA-25	Output Cath. Bypass
C6	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C7	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	" "
C8	.01	400		P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Compensation
C9	.006	600		P688-006	GT6D6		ST-6-006	TM-26	Output Plate Bypass

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: A. ANSLEY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½		D13-133	M-60-Z	Volume control
B	Shaft			A	Not Req.	Attach to R1A Per Instructions
R2A	100KΩ	½		D13-128	M-51-Z	Tone control
B	Shaft			A	Not Req.	Attach to R2A Per Instructions

RESISTORS

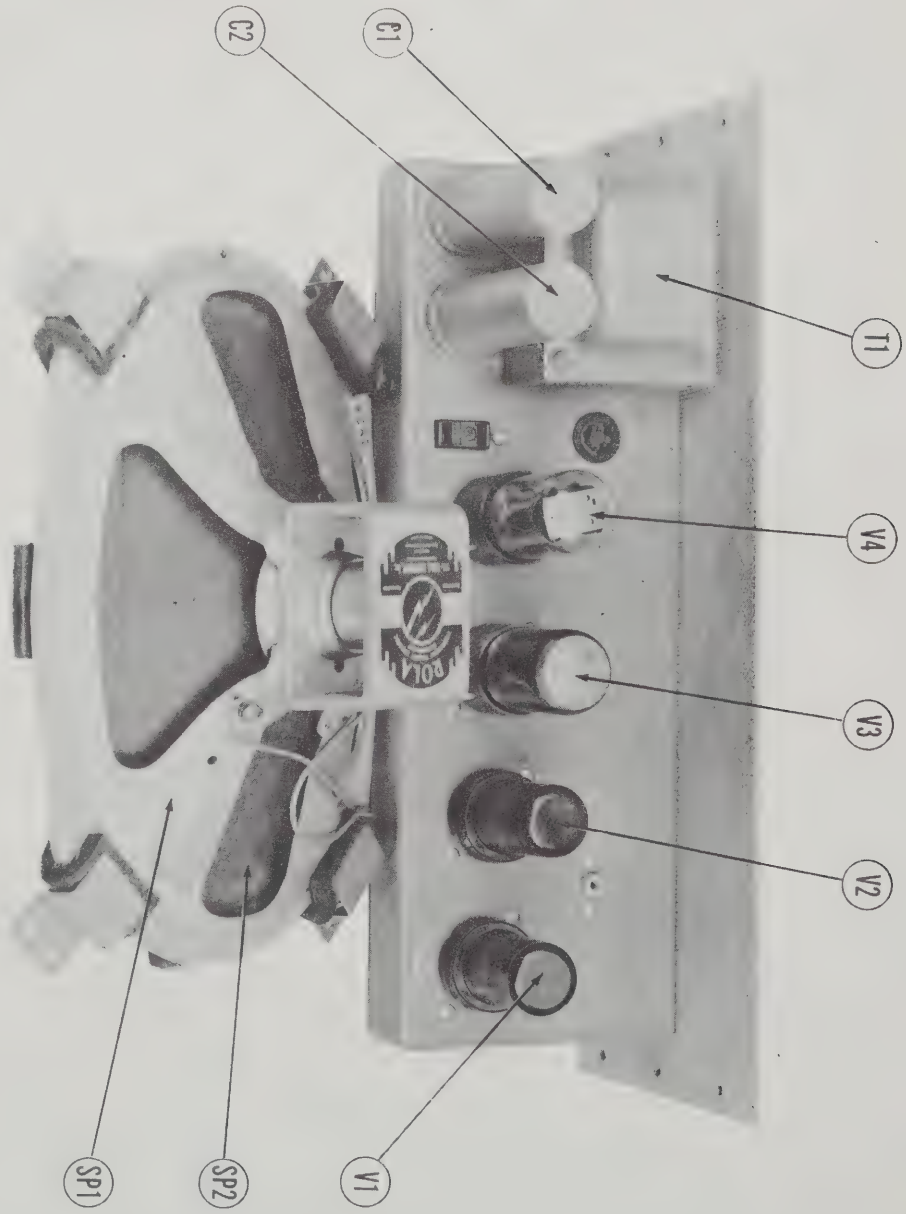
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
R3	510KΩ	½		BTS-470K	Grn.-Br.-Yl.	Mike Amp. Grid
R4	10KΩ	½		BTS-10K	Br.-Blk.-Or.	Mike Amp. Cathode
R5	240KΩ	½		BTS-220K	Red-Yl.-Yl.	Mike Amp. Plate
R6	10KΩ	½		BTS-10K	Br.-Blk.-Or.	AF Cathode
R7	150Ω	½		BW-½-150	Br.-Grn.-Br.	" "
R8	240KΩ	½		BTS-220K	Red-Yl.-Yl.	AF Plate
R9	510KΩ	½		BTS-470K	Grn.-Br.-Yl.	Output Grid
R10	360Ω	2		BW-2-330		Output Cathode
R11	22KΩ	½		BTS-22K	Red-Red-Or.	Feedback
R12	4700Ω	1		BTA-4700	Yl.-Vi.-Red	Filter
R13	650Ω	10		ABA-700 *		"

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ARTHUR ANSLEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
T1	117VAC @ .40A	640VCT @ .045 ADC	5VAC @ 2A	6.5VAC @ 1.1A		P-6010	PH-70 *	P-2950

* Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARTHUR ANSLEY PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5KΩ	3.2Ω	310Ω	.5Ω		A-3877†	RO-9 †	A-2901	† Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARTHUR ANSLEY PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.2Ω		ST-810 MOD.P69-V	69A3	
	CONE DIA.	V. C. DIA.				
SP2	6X9"	3/4"				

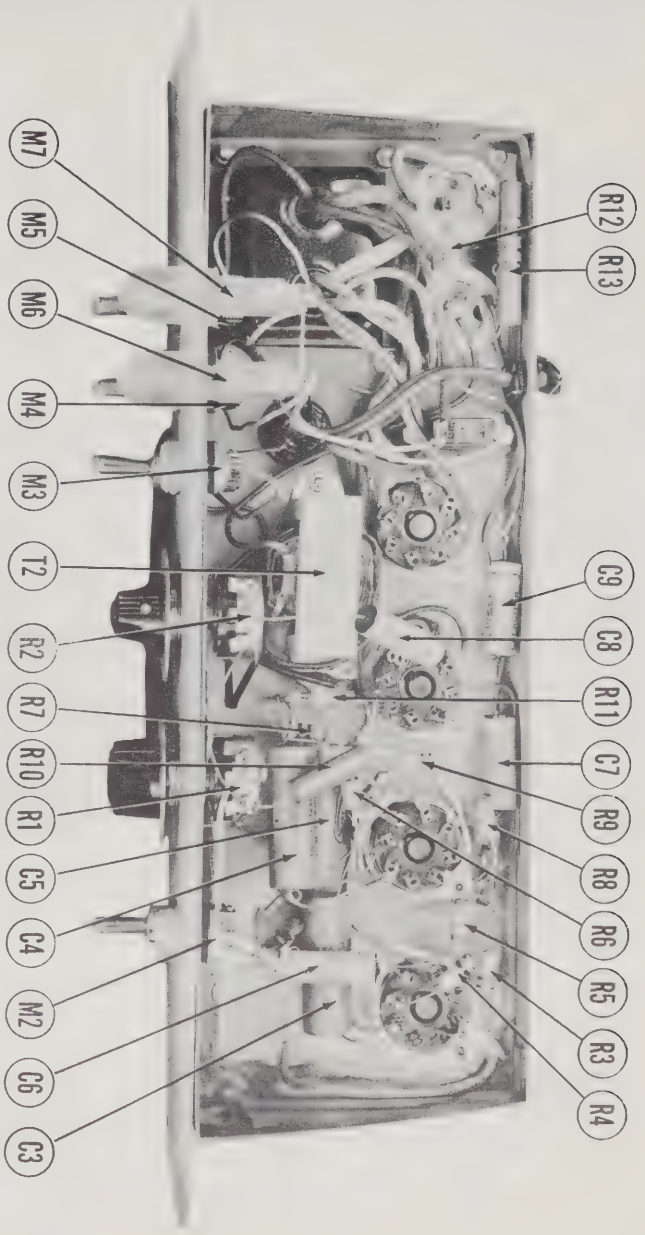
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	A. ANSLEY PART No.	ASTATIC PART No.	
M1		LP-78	

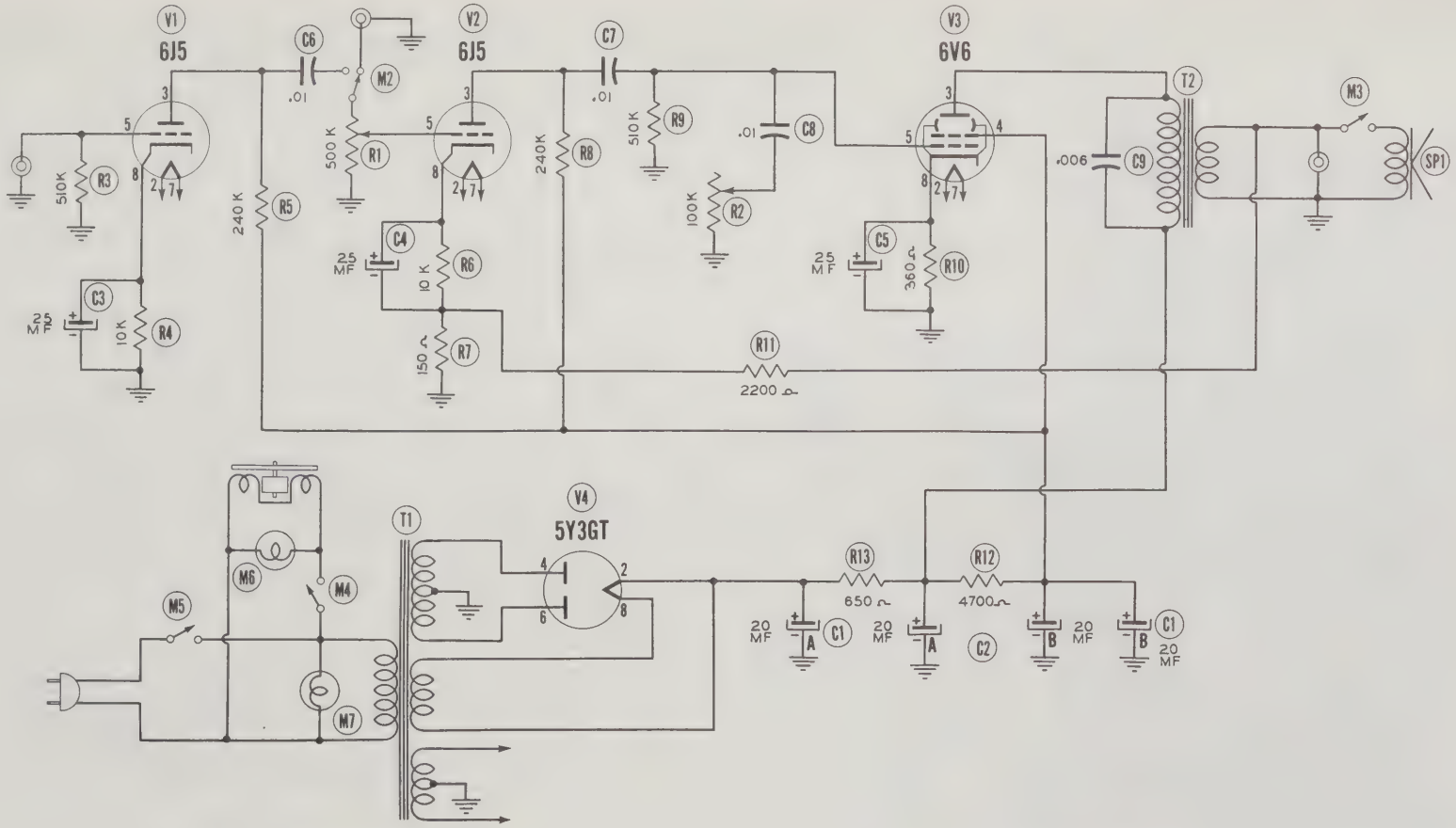
MISCELLANEOUS

ITEM No.	PART NAME	ARTHUR ANSLEY PART No.	NOTES
M2	Switch		Microphone
M3	"		Speaker
M4	"		Phono
M5	"		Power
M6	Lamp		Neon
M7	"		Neon

CHASSIS—BOTTOM VIEW



ARTHUR ANSLEY
MODEL SP-1



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6J5	0V	3VAC	125VDC	0V	0V	0V	3VAC	6.2VDC
V 2	6J5	0V	3VAC	140VDC	0V	0V	0V	3VAC	6.2VDC
V 3	6V6GT	0V	3VAC	295VDC	285VDC	0V	0V	3VAC	15VDC
V 4	5Y3GT	0V	340VAC	0V	310VAC	0V	310VAC	0V	340VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6J5	0Ω	.2Ω	*260KΩ	Inf.	500KΩ	Inf.	.2Ω	10KΩ
V 2	6J5	0Ω	.2Ω	*250KΩ	Inf.	500KΩ	Inf.	.2Ω	10KΩ
V 3	6V6GT	Inf.	.2Ω	*950Ω	*5.5KΩ	550KΩ	Inf.	.2Ω	360Ω
V 4	5Y3GT	Inf.	190KΩ	Inf.	420Ω	Inf.	440Ω	Inf.	160KΩ

* Measured from pin 8 of V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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498-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AUTOMATIC
MODEL B-44

AUTOMATIC, MODEL B-44

TRADE NAME	Automatic, Model B-44 (Tom Thumb-Bike Radio)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Battery Operated Portable Superheterodyne Receiver
TUBES(FOUR)	Types 1R5 Converter, 1U4 or 1T4 IF Amp., 1S5 DET-AVC-AF, 3S4 Power Output.
POWER SUPPLY RATING	1.5 Volts "A" Supply and 67.5 Volts "B" Supply 205MA @ 1.5 Volts DC and 8.4MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	530-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (Grid) 1R5 (V1). Low side to chassis.	455KC	Tuning cap fully open	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	250MMF	High side to Antenna. Low side to chassis.	1500KC	1500KC	"	A5	" " " "
3.	250MMF	"	1500KC	Tune for maximum signal.	"	A6	Adjust for maximum output. On some models this trimmer may not be adjustable.

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DATE 4/49 498-5 SET #60 FOLDER 5

PARTS LIST AND DESCRIPTIONS

AUTOMATIC
MODEL B-44

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AUTOMATIC PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2A	IF Amp.	1U4	1U4	6AR	
V2B	IF Amp.	1T4	1T4	6AR	
V3	DET-AVC-AF	1S5	1S5	6AU	
V4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
C1	[illegible]	100		PRS150/8	BR815		M-8-150	UT-81	RF Bypass
C2	12			1468-00001	5W5Q1	GP1K-15	MO.5-41	MS-41	RF Coupling
C3	.05	200		P288-05	GT2S5		TST-2-05	68P16	AVC Filter
C4	100			1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Osc. Grid Cap
C5	.05	200		P288-05	GT2S5		TST-2-05	68P16	Decoupling
C6	[illegible]			1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	Diode Filter
C7	.05	400		P688-002	GT6D2	GP2M-002	TST-6-002	68P2	Audio Coupling
C8A	2,000		See Note				TST-6-002	68P2	" "
C8B	50		" "	1468-0005	5W5Q5	GP1K-50	MO.5-45	1FM-31	AF Plate Bypass
C8C	8,000		" "				TST-6-006	68P5	AF Screen Bypass
C9	.002	400		P688-002	GT6D2	GP2M-002	TST-6-002	68P2	Output Plate Bypass

Item C8A, C8B, C8C, R6A, R6B, and R6C are combined into one unit obtainable under MFGRS Part No. YA002-001.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	
R1A	1 Meg.	½	RV-58	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	A	Not Req.	Attach to R1A Per Instructions
C	Switch		" "	42	SW-A2	" " " " "

RESISTORS

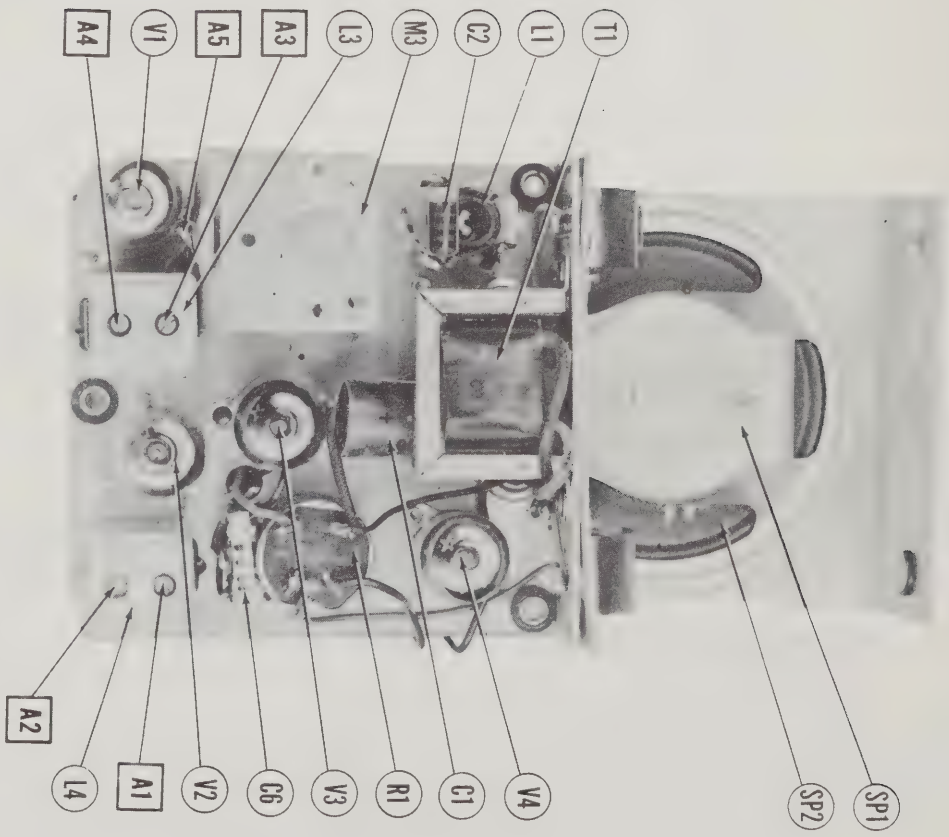
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	AUTOMATIC PART No.	IRC PART No.		
R2	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Osc. Grid
R3	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn.	AVC Network
R4	7500Ω	½		BTS-8200	Vi.-Grn.-Red	Decoupling
R5	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
R6A	4.7 Meg.	½	See Note	BTS-4.7 Meg.		AF Screen
R6B	1 Meg.	½	" "	BTS-1 Meg.		" Plate
R6C	2.2 Meg.	½	" "	BTS-2.2 Meg.		Output Grid
R7	820Ω	½		BTS-820	Gray-Red-Br.	Bias Network

Note Items C8A, C8B, C8C, R6A, R6B, and R6C are combined into one unit obtainable under MFGRS Pt#YA002-001.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	4300Ω	3.5Ω	300Ω	.5Ω			RO-302	A-3026	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.5Ω	PM-804			
	CONE DIA.	V. C. DIA.				
SP2	3 1/4"	9/16"				

R F COILS

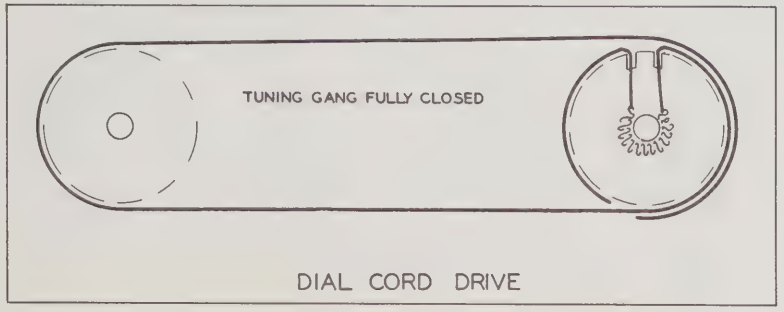
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	MEISSNER PART No.	
L1	Ant. Loading Coil	36Ω	11Ω			
L2	Osc. Coil	2.5Ω	10Ω			
L3	Input IF	15Ω	20Ω		16-6668	
L4	Output IF	15Ω	20Ω		16-6669	

BATTERIES

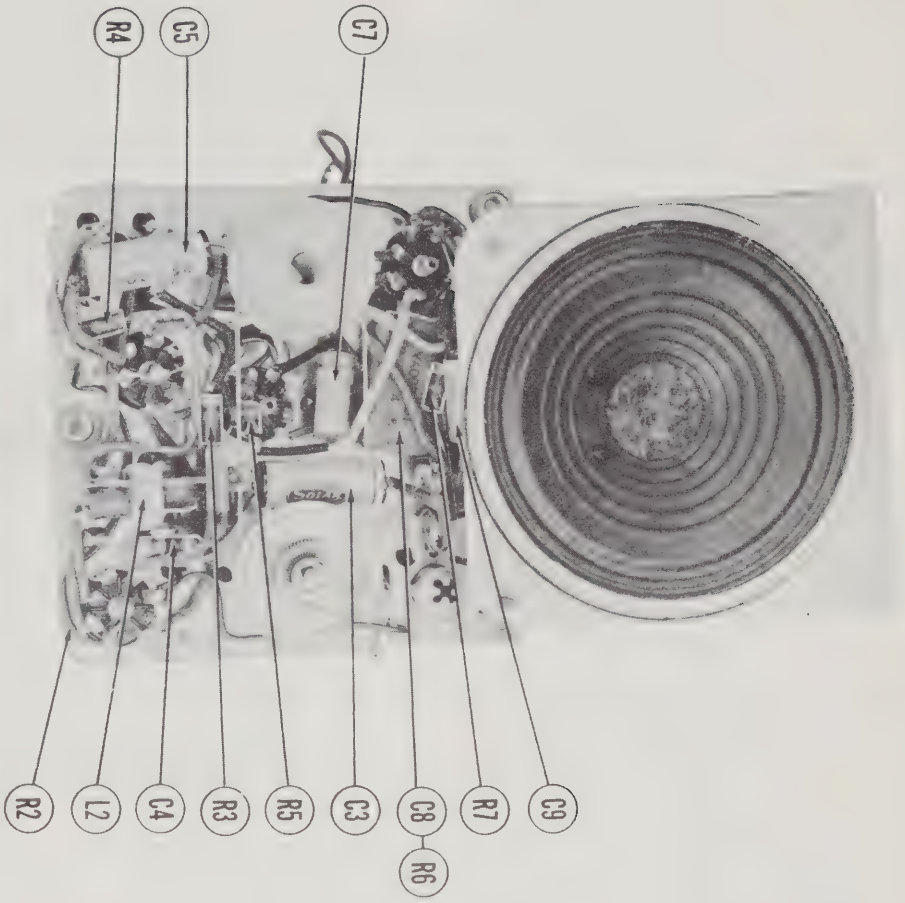
ITEM No.	VOLTAGE	AUTOMATIC PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M1	1.5V "A"		950			2			2 used in parallel
M2	67.5V"B"			467			XX45		

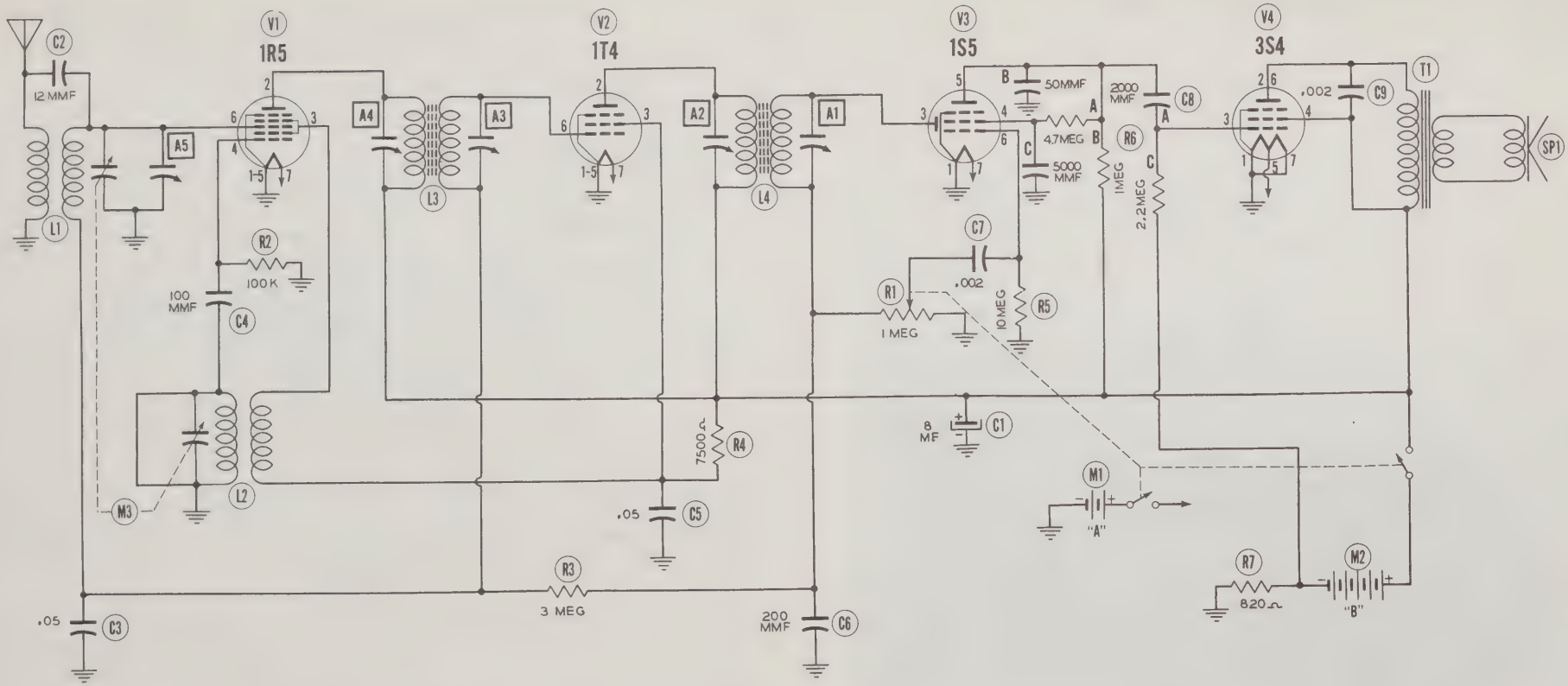
MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	2 Gang Var. Cap	CV-98	(13-373MMF, 18-135MMF)



CHASSIS—BOTTOM VIEW





IF= 455 KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0V	60VDC	47VDC	§-9.7VDC	0V	0V	1.5VDC
V 2	1U4	0V	60VDC	47VDC	0V	0V	0V	1.5VDC
V 3	1S5	0V	0V	0V	2.5VDC	15VDC	0V	1.5VDC
V 4	3S4	0V	55VDC	-.9VDC	60VDC	1.5VDC	53VDC	0V

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†15Ω	†7.5KΩ	100KΩ	*	4 Meg.	*
V 2	1U4	*	†15Ω	†7.5KΩ	Inf.	*	4 Meg.	*
V 3	1S5	*	26Ω	1 Meg.	†4.7Meg	† 1 Meg.	10 Meg.	*
V 4	3S4	*	†300Ω	2.2 Meg.	†0Ω	*	†300Ω	*

† Measured from B+ side of switch.

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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498-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

AUTOMATIC MODELS
TV-707, TV-709, TV-710

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AUTOMATIC MODELS
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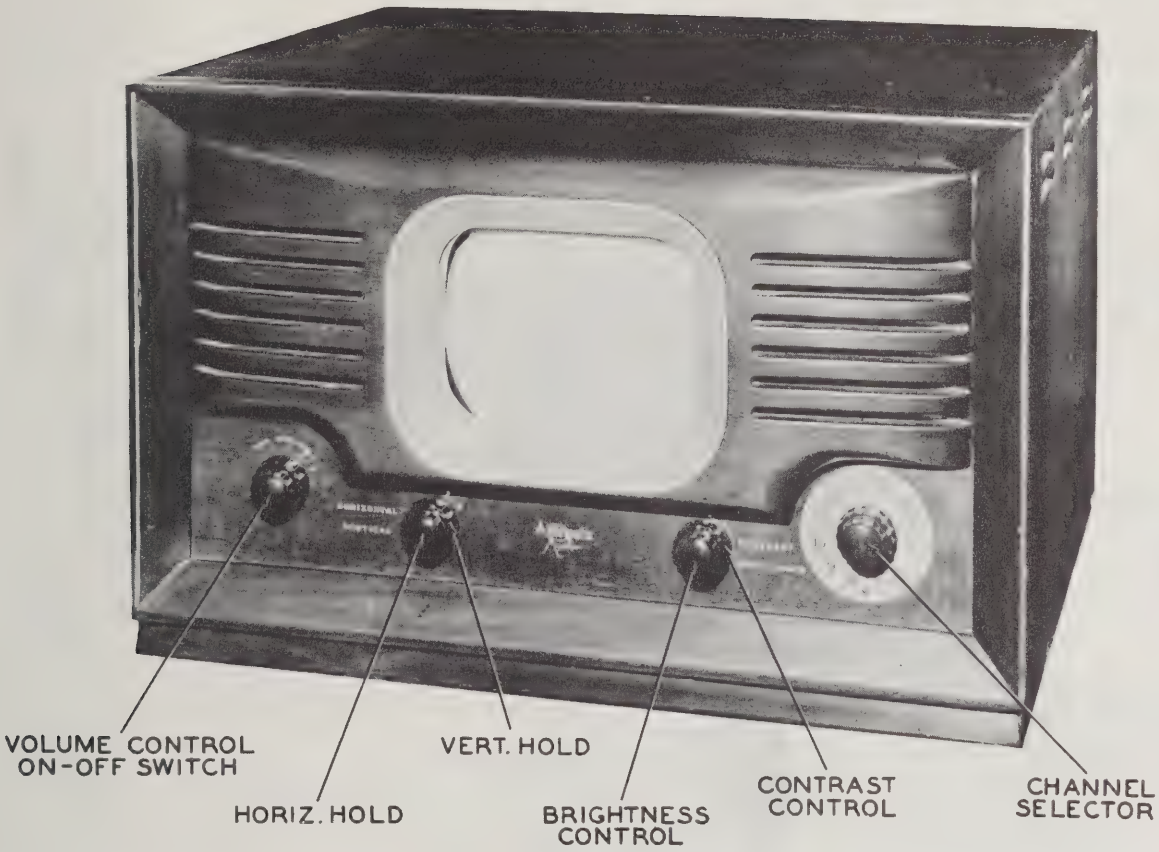
Date 4/49—No. 498-6 Set No. 60—Folder No. 6



AUTOMATIC
MODELS TV-707, TV-709, TV-710

AUTOMATIC MODEL TV-709

TRADE NAME Automatic, Models TV-707, TV-709, TV-710
MANUFACTURER Automatic Radio Mfg. Co., Inc. 122 Brookline Ave., Boston, Mass.
TYPE SET Television Receiver
TUBES Twenty-Two

POWER SUPPLY 105-125 Volts, 60 cycle AC RATING .99 Amp. @ 117 Volts
TUNING RANGE-Channels 2 through 13

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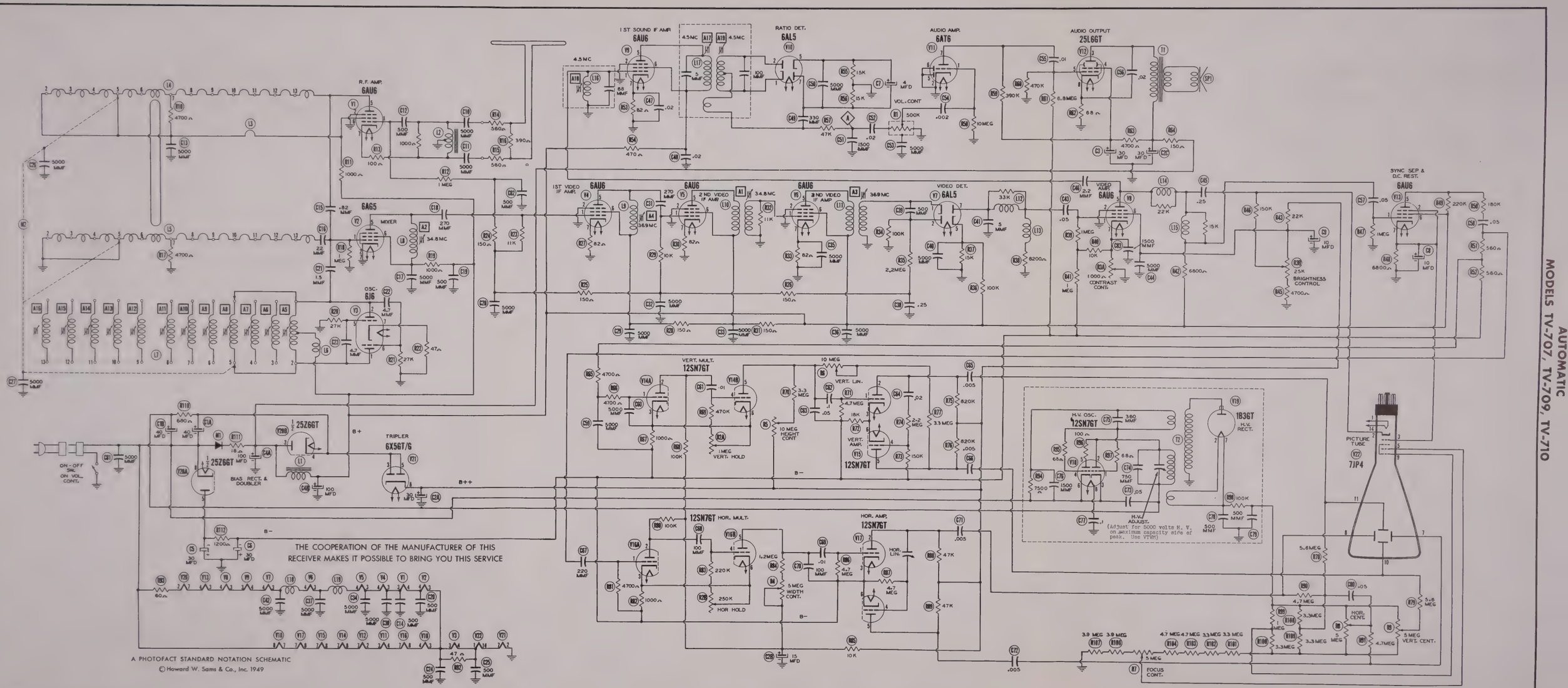
DATE 4/49 498-6 SET # 60 FOLDER #6



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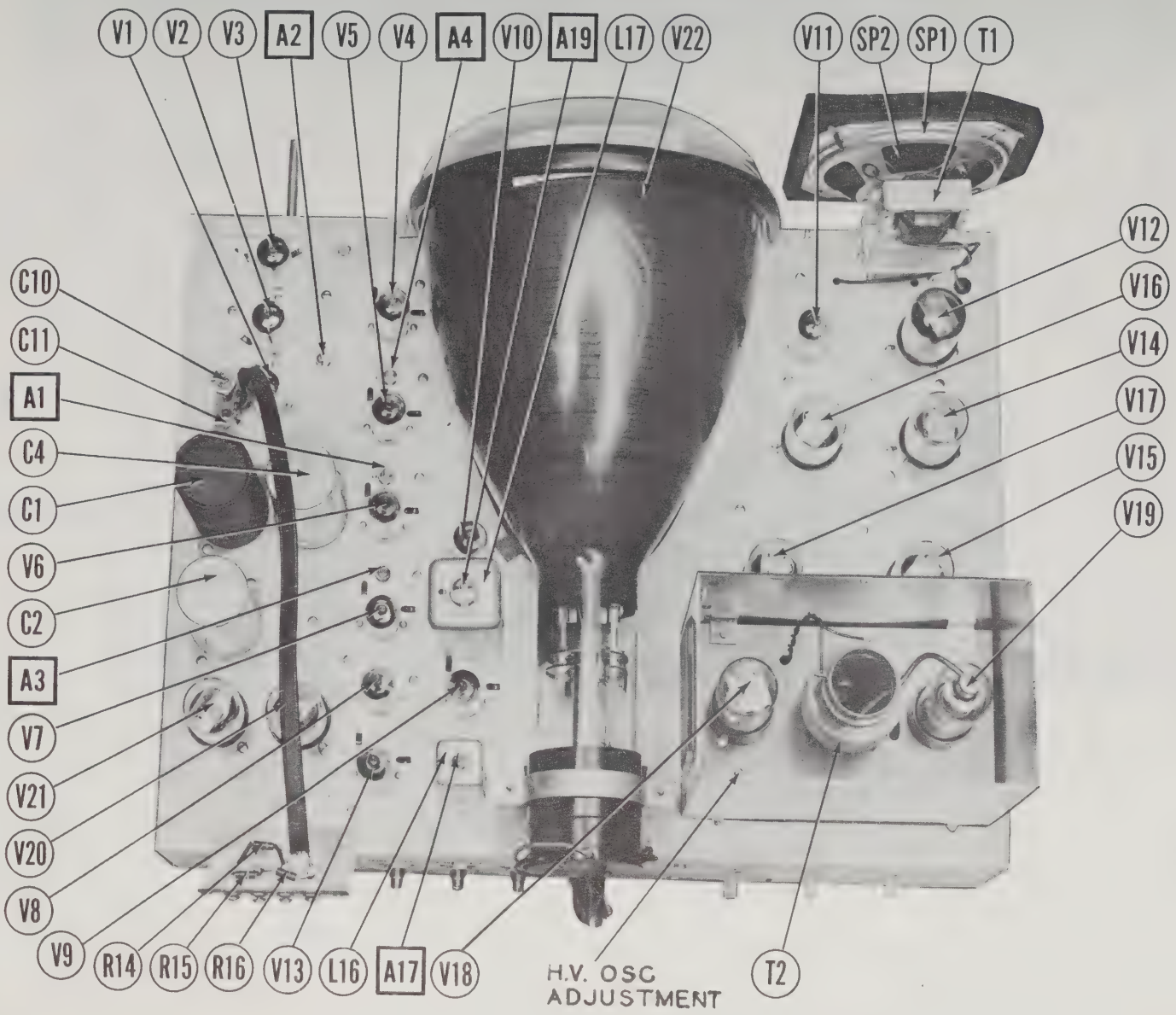
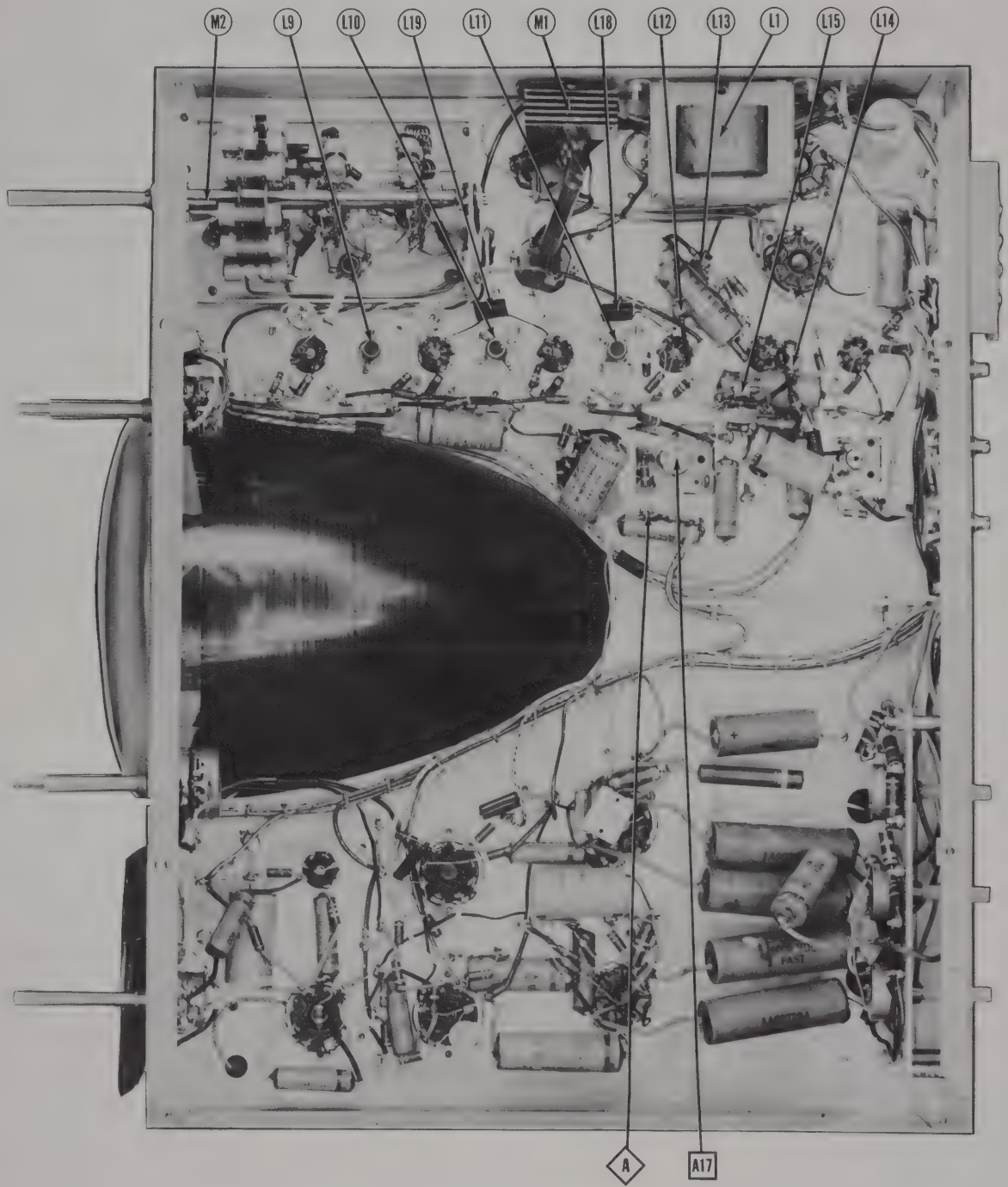
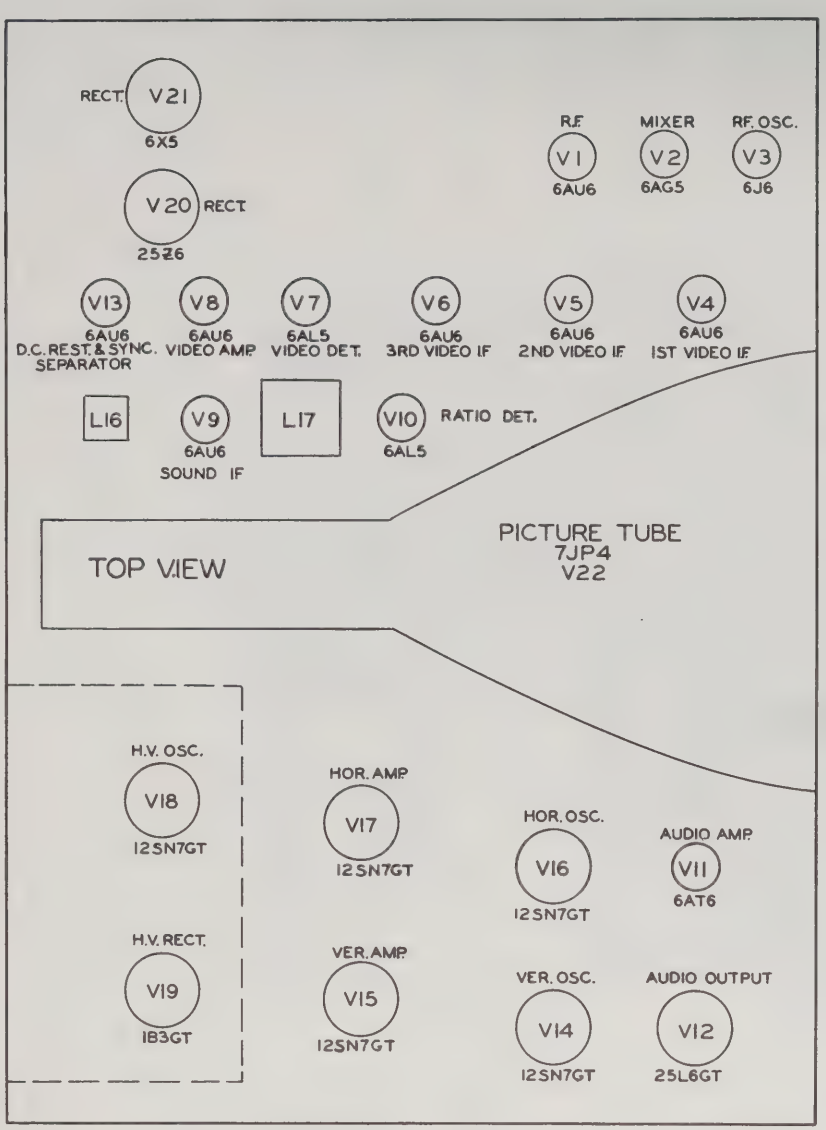
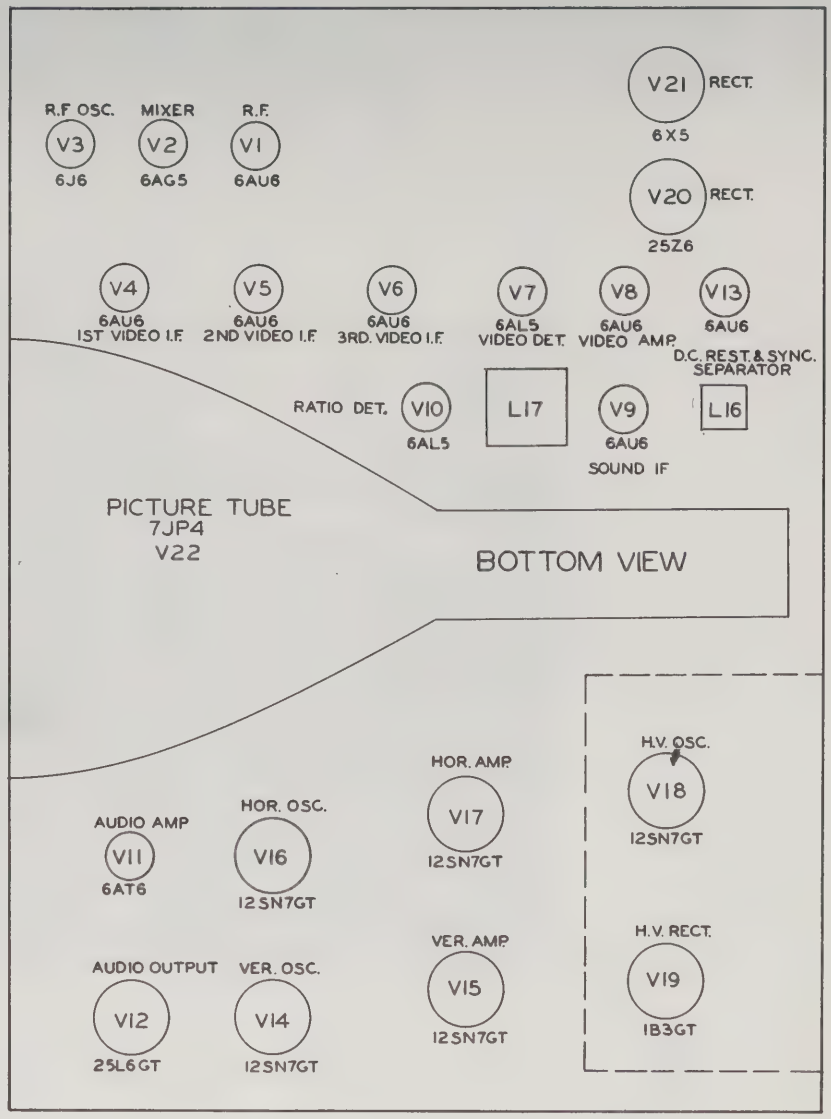


CHASSIS TOP VIEW

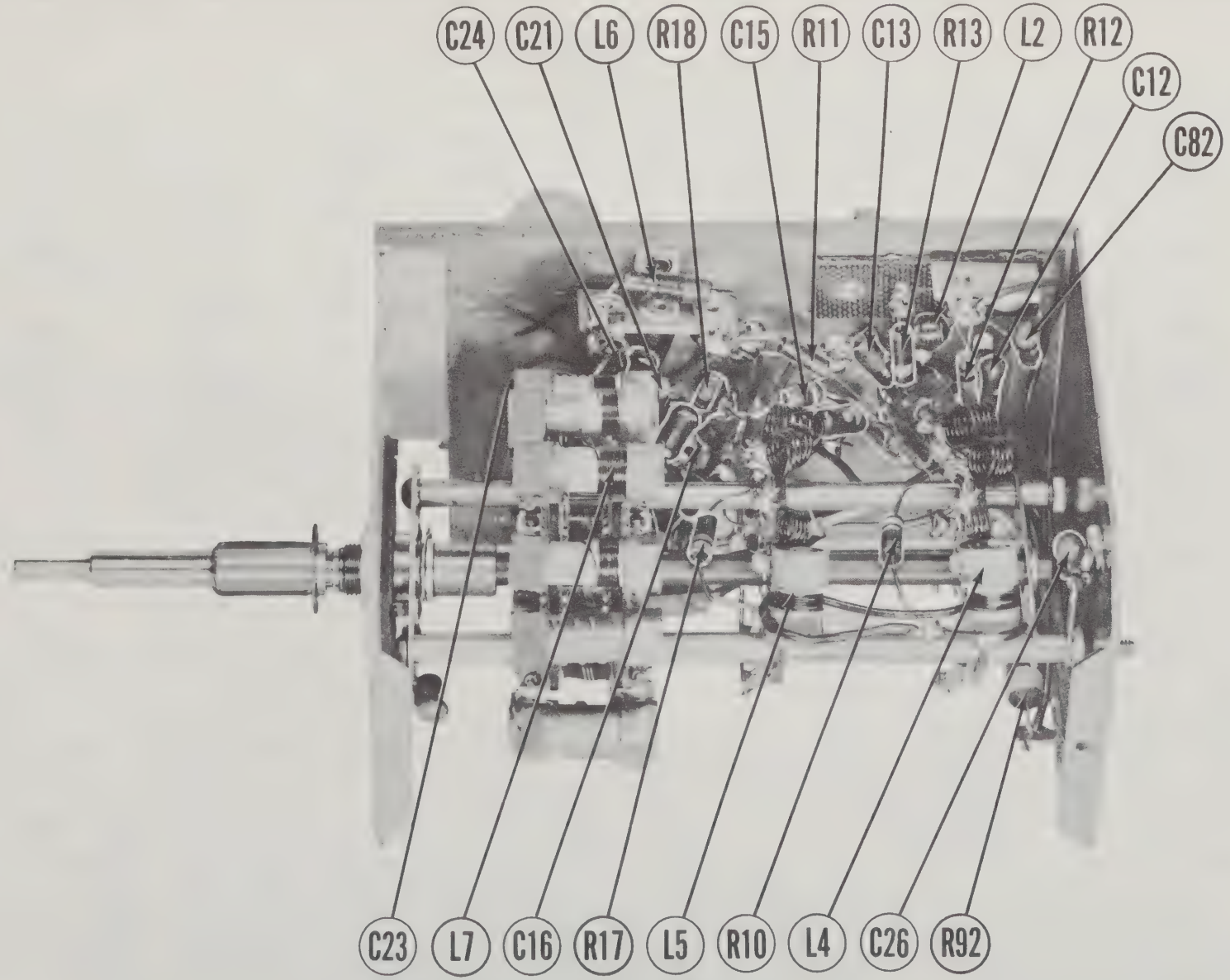


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE

RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AU6	-.1VDC	0V.	31VAC	25VAC	117VDC	117VDC	.7VDC		
2	6AG5	-3.2VDC	0V.	19VAC	25VAC	122VDC	122VDC	0V.		
3	6J6	125VDC	125VDC	19VAC	12VAC	-5.2VDC§	-3.4VDC§	1.6VDC		
4	6AU6	-.2VDC	0V.	31VAC	37VAC	125VDC	125VDC	.7VDC		
5	6AU6	-.2VDC	0V.	37VAC	43VAC	125VDC	125VDC	.7VDC		
6	6AU6	0V.	0V.	43VAC	50VAC	127VDC	127VDC	1VDC		
7	6AL5	0V.	0V.	50VAC	56VAC	1.7VDC	-0V.	-.4VDC		
8	6AU6	-.1VDC	0V.	62VAC	67VAC	80VDC	157VDC	0V.		
9	6AU6	0V.	0V.	62VAC	56VAC	120VDC	120VDC	1.1VDC		
10	6AL5	0V.	0V.	19VAC	25VAC	.4VDC	0V.	-.4VDC		
11	6AT6	-.7VDC	0V.	43VAC	37VAC	0V.	0V.	43VDC		
12	25L6GT	0V.	45VAC	128VDC	126VDC	-3.2VDC	0V.	68VAC *	1.8VDC	
13	6AU6	0V.	3.7VDC	67VAC	73VAC	55VDC	125VDC	3.7VDC		
14	12SN7GT	0V.	100VDC*	3.2VDC*	-14VDC	30VDC* 70VDC*	3.2VDC*	80VAC	68VAC	
15	12SN7GT	-4VDC *	270VDC*	12VDC*	0V.	190VDC*	12VDC*	93VAC	80VAC	
16	12SN7GT	0V.*	105VDC*	3.2VDC*	-5VDC*	20VDC* 80VDC*	3.2VDC*	37VAC	25VAC	
17	12SN7GT	-17VDC*	290VDC*	0V.*	-4VDC*	270VDC*	0V.*	110VAC	93VAC	
18	12SN7GT	-63VDC†	250VDC†	117VAC	-63VDC†	250VDC†	117VAC	110VAC	117VAC	
19	1B3GT	DO NOT MEASURE								
20	25Z6GT	0V.	98VAC	130VDC	260VDC	-145VDC	0V.	73VAC	117VAC	
21	6X5GT	0V.	0V.	260VDC	0V.	260VDC	0V.	6VAC	400VDC	
22	7JP4	12VAC	50VDC	3.7VDC		≠		≠	≠	
23		Pin 9 ≠	Pin 10 ≠	Pin 11 ≠	Pin 12	Pin 13	Pin 14 6VAC			

* Measured From Pin 3-V17
† Measured From Pin 8-V20
≠ Do Not Measure.
§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AU6	3.2Meg	0Ω	10Ω	8Ω	1200Ω*	1200Ω*	100Ω		
2	6AG5	1 Meg	0Ω	5Ω	8Ω	1K*	1K*	0Ω		
3	6J6	60Ω*	60Ω*	5Ω	3Ω	27K	27K	47Ω		
4	6AU6	2.2Meg	0Ω	10Ω	13Ω	360Ω*	360Ω0	82Ω		
5	6AU6	2.2Meg	0Ω	13Ω	16Ω	210Ω*	210Ω*	82Ω		
6	6AU6	0Ω	0Ω	16Ω	18Ω	60Ω*	60Ω*	82Ω		
7	6AL5	0Ω	47K	18Ω	20Ω	1.5K	0Ω	8.2K		
8	6AU6	1 Meg	0Ω	23Ω	25Ω	6.8K*	25K†	0Ω		
9	6AU6	1Ω	0Ω	23Ω	20Ω	530Ω*	530Ω*	82Ω		
10	6AL5	INF.	INF.	5Ω	8Ω	15K	0Ω	15K		
11	6AT6	10 Meg	0Ω	18Ω	16Ω	0Ω	0Ω	400K*		
12	25L6GT	0Ω	18Ω	400Ω*	5K*	390K	INF.	30Ω	68Ω	
13	6AU6	1 Meg	6.8K	25Ω	27Ω	220K*	60Ω*	6.8K		
14	12SN7GT	11.2K≠	100K†	2.2K≠	1.4Meg≠	3.3Meg † 13.3Meg†	2.2K≠	35Ω	30Ω	
15	12SN7GT	4.7Meg≠	820K†	20K≠	150K≠	820K†	20K≠	38Ω	35Ω	
16	12SN7GT	5K≠	110K†	2.2K≠	470K≠	1.2Meg † 6.2Meg †	2.2K≠	16Ω	8Ω	
17	12SN7GT	5 Meg≠	47K†	1.2K≠	5 Meg ≠	47K†	1.2K≠	40Ω	38Ω	
18	12SN7GT	7.5K	700Ω§	0Ω††	7.5K	800Ω§	0Ω††	40Ω	42Ω	
19	1B3GT	INF.	INF.	INF.	INF.	INF.	INF.	INF.	INF.	680Ω
20	25Z6GT	INF.	32Ω	22K	180K	400K	INF.	27Ω	42Ω	
21	6X5GT	INF.	0Ω	180KΩ	INF.	180KΩ	INF.	1.5Ω	45K	
22	7JP4	3Ω	155KΩ	6.8K	INF.	8Meg. 13Meg.	INF.	30 Meg	30 Meg	
23		Pin 9 25 Meg.	Pin 10 30 Meg.	Pin 11 30 Meg.	Pin 12 INF.	Pin 13 INF.	Pin 14 1.5Ω			

* Measured From Pin 3-V20
† Measured From Pin 8-V21
≠ Measured From Pin 5-V20
§ Measured From Pin 4-V20
†† Measured From Pin 8-V20

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms.
2. Sockets connections are shown as bottom views.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at maximum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate shock hazard, disable high voltage by unsoldering the lead feeding B+ to high voltage oscillator tube 12SN7 (V18). Use an isolation transformer when available as one side of the line is connected to chassis.

VIDEO IF ALIGNMENT

A tube shield slipped over the mixer tube, but not grounded, makes a practical and convenient method of injecting the signal from the signal generator. The signal generator output is adjusted to give a reading of approximately -1 volt at Pin 7 6AL5 (V7) with AGC line grounded.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1		High side to ungrounded tube shield (See prealignment instructions). Low side to chassis.	34.8MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V7). Common lead to chassis.	A1,A2	Adjust for maximum deflection. Reduce signal gen. output if necessary to hold about -1 volt reading.
2		"	36.9MC (No mod.)	"	"	A3,A4	"

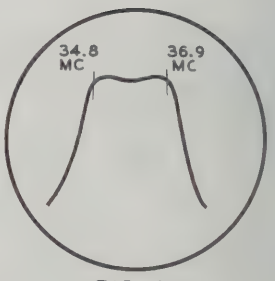


FIG. 1

OVERALL IF RESPONSE CHECK

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3		High side to ungrounded tube shield (See above). Low side to chassis.	35MC (10MC sweep)	34.8MC & 36.9MC	Any	Vertical amp. to Pin 1 6AU6 (V8). Low side to chassis.		Check response pattern to see that markers appear as per Fig. 1. If not, make slight adjustments of A1, A2, A3 and A4.

RF OSCILLATOR ALIGNMENT

The RF Amplifier and mixer lines are pre-set at the factory and due to their stability normally do not require adjustment. Since Channel 2 Oscillator Coil is in parallel with all other osc. coils at their respective channels. Channel 2 must be aligned first. If Channel 2 is readjusted at any time, it will be necessary to realign all the other channels.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4	2 - 150Ω carbon res. in series with each sig.gen. lead.	Across "Distant" antenna terminal strip.	57MC (10MC sweep)	55.25MC (Picture) 59.75MC (Sound)	2	Vert. Amp. to Pin 1 6AU6 (V8). Low side to chassis.	A5	Adjust to place picture marker at 50% point on pattern as per Fig. 2. Check sound carrier to see if it appears at proper point as per Fig. 2.
5	"	"	63MC (10MC sweep)	61.25MC (Picture) 65.75MC (Sound)	3	"	A6	"
6	"	"	69MC (10MC sweep)	67.25MC (Picture) 71.75MC (Sound)	4	"	A7	"
7	"	"	79MC (10MC sweep)	77.25MC (Picture) 81.75MC (Sound)	5	"	A8	"
8	"	"	85MC (10MC sweep)	83.25MC (Picture) 87.75MC (Sound)	6	"	A9	"
9	"	"	177MC (10MC sweep)	175.25MC (Picture) 179.75MC (Sound)	7	"	A10	"
10	"	"	183MC (10MC sweep)	181.25MC (Picture) 185.75MC (Sound)	8	"	A11	"
11	"	"	189MC (10MC sweep)	187.25MC (Picture) 191.75MC (Sound)	9	"	A12	"
12	"	"	195MC (10MC sweep)	193.25MC (Picture) 197.75MC (Sound)	10	"	A13	"
13	"	"	201MC (10MC sweep)	199.25MC (Picture) 203.75MC (Sound)	11	"	A14	"
14	"	"	207MC (10MC sweep)	205.25MC (Picture) 209.75MC (Sound)	12	"	A15	"
15	"	"	213MC (10MC sweep)	211.25MC (Picture) 215.75MC (Sound)	13	"	A16	"

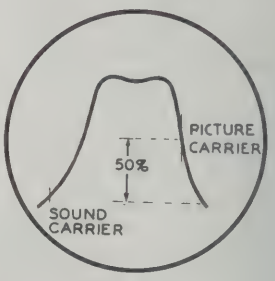
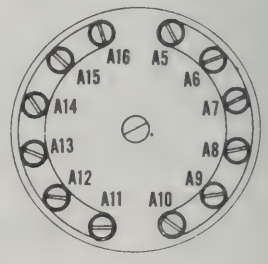


FIG. 2

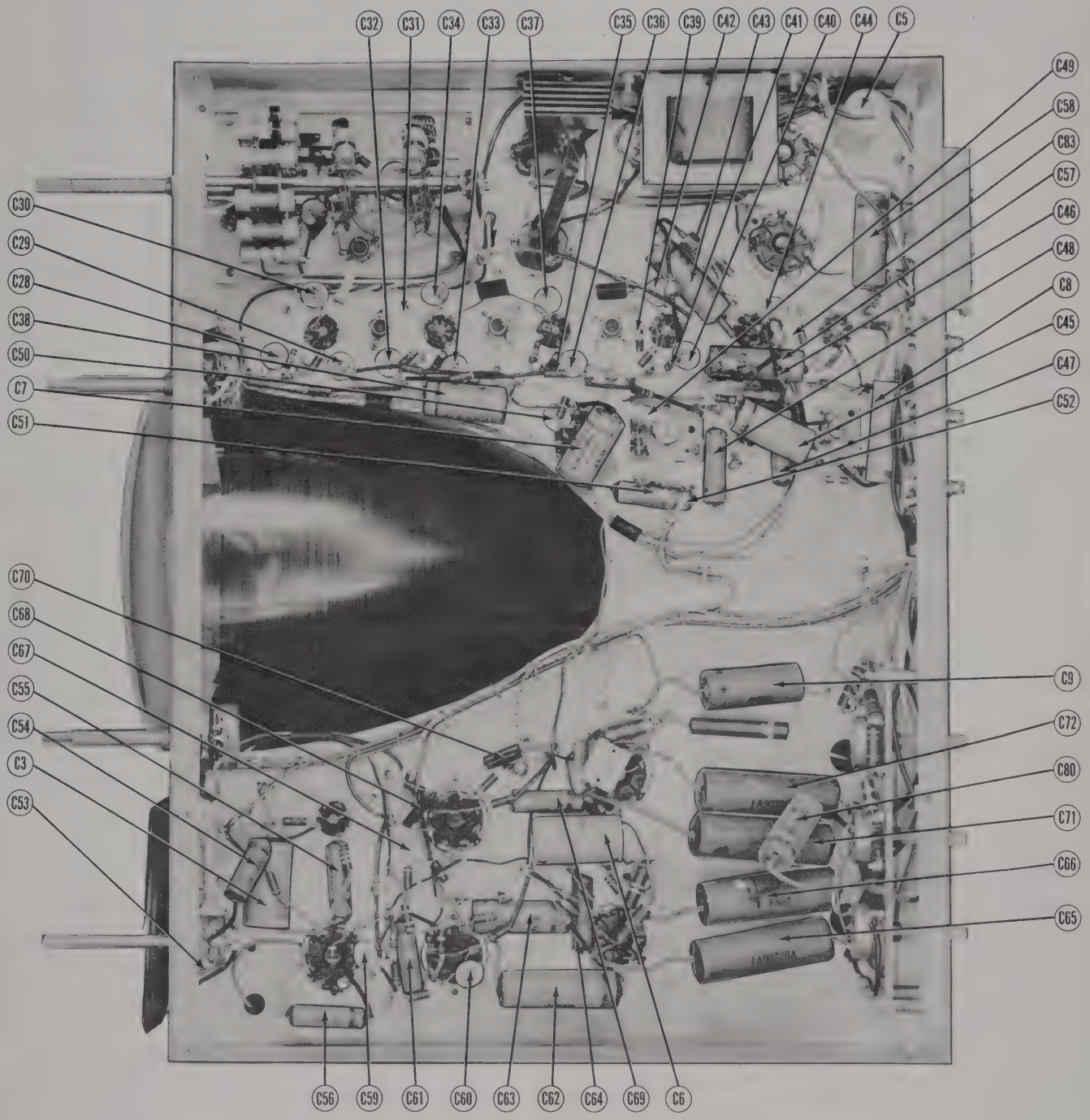


OSC. ALIGNMENT POINTS

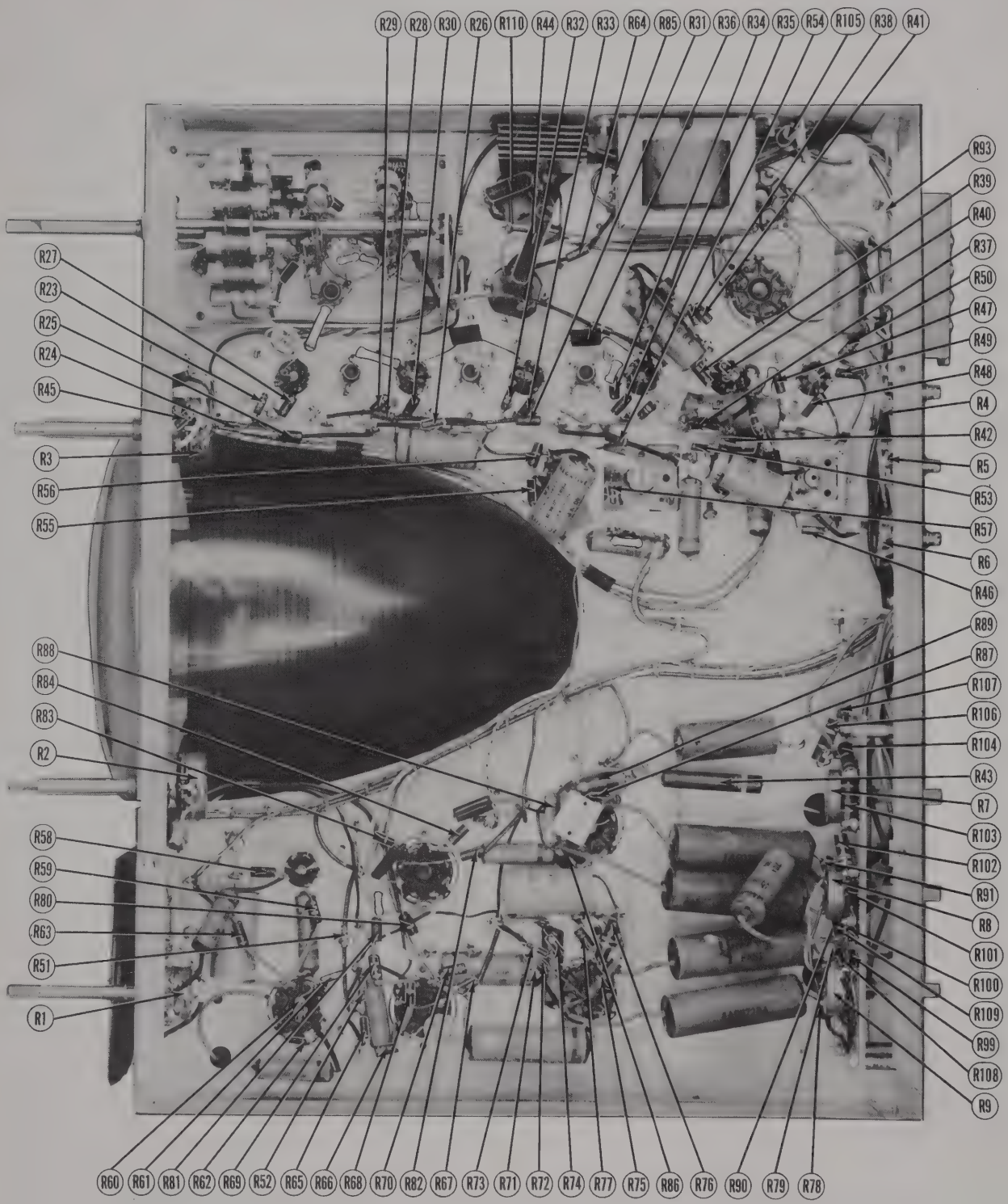
SOUND IF ALIGNMENT

When adjusting the 4.5MC trap and the primary of the ratio detector coils (A17 & A18), attenuate signal generator so VTVM reading is held to approximately -3 to -4 volts.

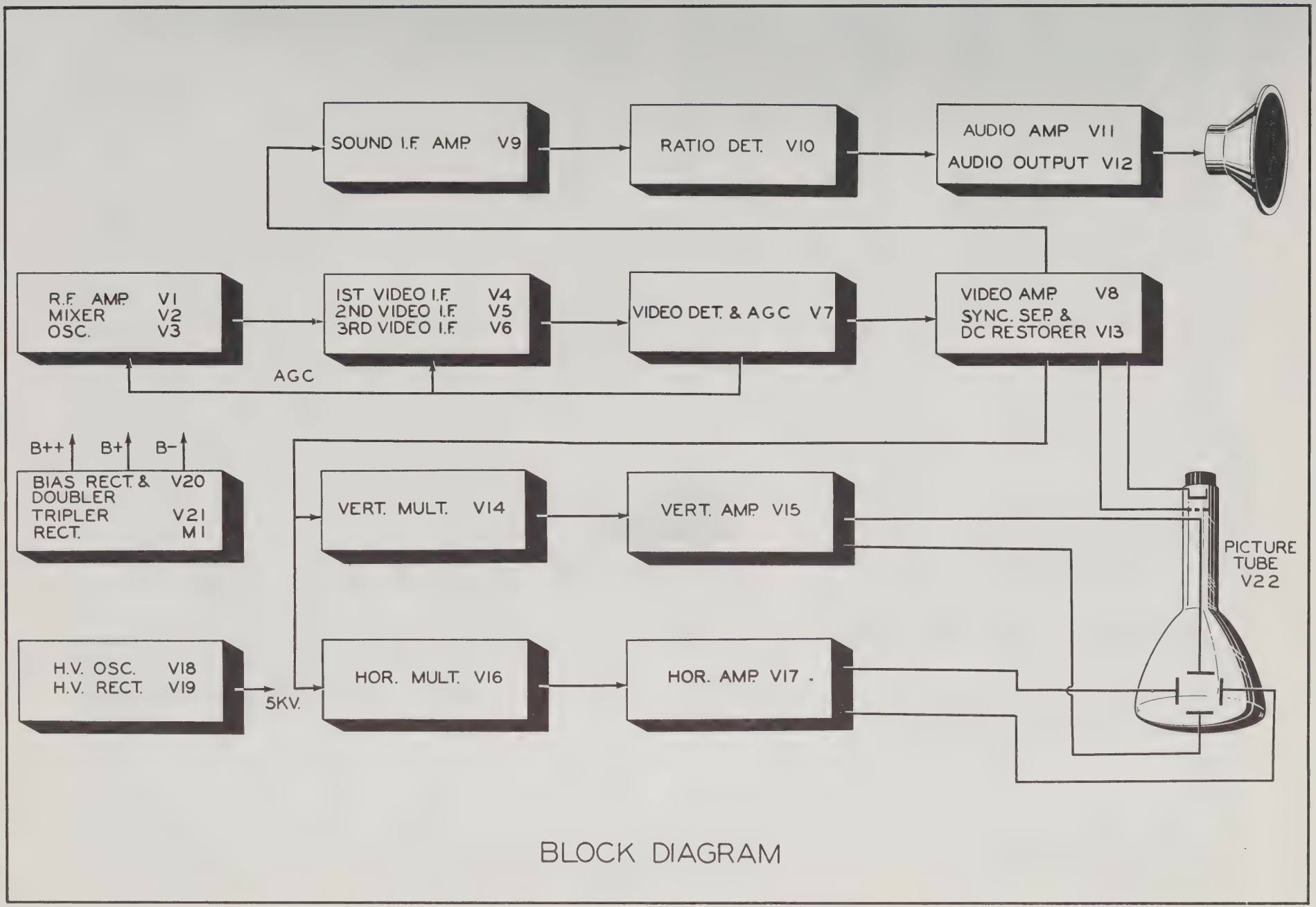
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
16	5000MMF	High side to Pin 1 6AU6 (V8). Low side to chassis.	4.5MC (No mod.)	Any	DC probe to Pin 7 6AL5 (V10). Common lead to chassis.	A17, A18	Adjust for maximum deflection.
17	5000MMF	"	"	"	DC probe to Point ⚠ . Common lead to chassis	A19	Adjust for zero reading. A positive & negative reading can be obtained on either side of the correct setting.



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6AU6	7BK	
V2	Mixer		6AG5	7BD	
V3	Oscillator		6J6	7BF	
V4	1st Video IF		6AU6	7BK	
V5	2nd Video IF		6AU6	7BK	
V6	3rd Video IF		6AU6	7BK	
V7	Video Detector		6AL5	6BT	
V8	Video Amp.		6AU6	7BK	
V9	Sound IF		6AU6	7BK	
V10	Ratio Detector		6AL5	6BT	
V11	Audio Amp.		6AT6	7BT	
V12	Audio Output		25L6GT	7AC	
V13	Sync. Sep. & DC Res.		6AU6	7BK	
V14	Vertical Multiv.		12SN7GT	8BD	
V15	Vertical Amp.		12SN7GT	8BD	
V16	Horizontal Mult.		12SN7GT	8BD	
V17	Horizontal Amp.		12SN7GT	8BD	
V18	H. V. Osc.		12SN7GT	8BD	
V19	H. V. Rectifier		1B3GT	3C	
V20	Bias Rectifier & Doubler		25Z6GT	7Q	
V21	Tripler		6AX5T/G	6S	
V22	Picture Tube		7JP4		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	350		AF88J	UP4445			TVL-64	◓ Doubler
B	40	350		"	"			"	▲ Filter
C2A	30	450		AF88J				TVL-54	◓ "
B	15	450		LPRS450/16				"	■ "
C	30	150						"	▲ "
C3	30	150		PRS150/30	BR3015		M-30-150	UT-301	◓ "
C4A	100	150		AF101010 D4A*	UF9BJ 1038				▲ "
B	100	150		PRS150/50					◓ "
C5	30	150		PRS150/30	BR3015		M-30-150	TVA-18	" "
C6	30	150		PRS150/30	BR3015		M-30-150	TVA-18	
C7	4	25		PRS150/4	BR415		M-TV-4-50	TVA-13	Stabilizing Cap.
C8	10	250		PRS250/12	BR1225		M-10-350	UT-122	Sync. Sep. Cath. Bypass
C9	10	250		PRS250/12	BR1225		M-10-350	UT-122	Decoupling
C10	5000					GP2M-005			Ant. Coupling
C11	5000					GP2M-005			" "
C12	500					GP1K-500			RF Coupling
C13	5000					GP2M-005			RF Screen Bypass
C14	500					GP2K-500			RF Fil. Bypass
C15	.82								RF Coupling
C16	22					GP1K-25			Mixer Grid Cap.
C17	5000					GP2M-005			Mixer Decoupling
C18	270					GP2K-250			IF Coupling
C19	500					GP2K-500			RF Bypass
C20	500					GP2K-500			Mixer. Fil. Bypass
C21	1.5					NP0K-1.5			Osc. Coupling
C22	4.7					NP0K-5			Osc. Feedback
C23	4.7					NP0K-5			" "
C24	500					GP2K-500			Osc. Fil.- Bypass
C25	500					GP2K-500			" "
C26	5000					GP2M-005			Switch Bypass
C27	5000					GP2M-005			" "
C28	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AGC Filter
C29	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st V. Decoupling
C30	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st V. Fil. Bypass
C31	270			1468-00025	SW5T25	GP2K-250	MO.5-325	1FM-325	IF Coupling
C32	5000			1467-006	1D5D5	GP2M-005	MW.5-25	1FM-25	AGC Filter
C33	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd V. Decoupling
C34	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd V. Fil. Bypass
C35	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	3rd V. Cath. Bypass
C36	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	3rd V. Decoupling
C37	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	3rd V. Fil. Bypass
C38	.25	400		P488-25	GT4P25		ST-4-25	TC-2	AGC Filter
C39	500			1468-0005	SW5T5	GP2K-500	MO.5-35	1FM-35	IF Coupling
C40	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	DAGC Diode Filter
C41	5			1469-0000 05	SR5V5	NP0K-5	MO8.5-55	MS-55	RF Bypass
C42	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Det. Fil. Bypass
C43	.05	500		P688-05	GT6S5		ST-6-05	TM-15	Video Coupling
C44	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	V. Amp Screen Bypass
C45	.25	400		P488-25	GT4P25		ST-4-25	TC-2	Video Coupling
C46	2.2					NP0K-3			Sound IF Coupling
C47	.02	400		P488-02	GT4S2		ST-4-02	TM-12	1st S. IF Cath. Bypass
C48	.02	400		P488-02	GT4S2		ST-4-02	TM-12	1st S. IF Decoupling
C49	330			1468-00035	SW5T3	GP2K-300	MO.5-33	1FM-33S	Diode Load Cap.
C50	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass
C51	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	De-emphasis
C52	.02	400		P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C53	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Vol. Cont. Isolation
C54	.002	500		P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling.
C55	.01	500		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	" "
C56	.02	400		P488-02	GT4S2		ST-4-02	TM-12	Output Plate Bypass
C57	.05	500		P688-05	GT6S5		ST-6-05	TM-15	Video Coupling
C58	.05	500		P688-05	GT6S5		ST-6-05	TM-15	Sync. Coupling
C59	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Integrator Net.
C60	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "
C61	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Vert. Mult. Feedback
C62	.1	600		P698-1	GT6P1		ST-6-1	TM-1	Vert. Coupling
C63	.05	500		P688-05	GT6S5		ST-6-05	TM-15	vert. Discharge
C64	.02	600		P688-02	GT6S2		ST-6-02	TM-12	Vert. Coupling
C65	.005	6000		7584-005	DSTH 60D5			TVM-256	" "
C66	.005	6000		7584-005	DSTH 60D5			TVM-256	" "
C67	220								Differentiator
C68	100	500		1468-0001	SW5T1	GP1K-100	MO.5-31	1FM-31	Hor. Mult. Feedback
C69	.01	600		P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Hor. Coupling
C70	100	500		1468-0001	SW5T1	GP1K-100	MO.5-31	1FM-31	Hor. Discharge
C71	.005	6000		7584-005	DSTH 60D5			TVM-256	hor. Coupling
C72	.005	6000		7584-005	DSTH 60D5			TVM-256	" "
C73	.05	600		P688-05	GT6S5		ST-6-05	TM-15	H. V. Osc. Plate Decoup.
C74	750			1469-00075					Fixed Trimmer
C75	360			1469-00035					"
C76	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	H. V. Osc. Grid Cap.
C77	.1			P698-1	GT6P1		ST-6-1	TM-1	H. V. Osc. Fil. Bypass
C78	500	10000				410-500			H. V. Filter Tm. Ox.
C79	500	10000				410-500			" " " "
C80	.05	600		P688-05	GT6S5		ST-6-05	TM-15	Hor. Centering Bypass
C81	5000			1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Line Filter
C82	500			1468-0005	SW5T5	GP2K-500	MO.5-35	1FM-35	AGC Filter
C83	1500			1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	V. Amp. Cath. Bypass

* Parallel sections to obtained desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	TRV-75	D13-133	M-60-Z	Volume control
B	Shaft		Not. Req.	A	Not. Req.	Attach to R1A Per Instructions
C	Switch		Not. Req.	41	SW-A	" " " "
R2A	1 Meg.	½	TRV-77			Vert. Hold control
B	250KΩ	½				Horiz. " " Dual
R3A	100KΩ	½	TRV-76			Contrast control
B	25KΩ	½				Brightness " Dual
R4A	5 Meg.	½	TRV-79	D11-141		Horiz. size control
B	Shaft		Not. Req.	A		Attach to R4A Per Instructions
R5A	10 Meg.	½	TRV-79	D11-143		Vert. size control
B	Shaft		Not. Req.	A		Attach to R5A Per Instructions
R6A	10 Meg.	½	TRV-78	D11-143		Vert. linearity control
B	Shaft		Not. Req.	A		Attach to R6A Per Instructions
R7	5 Meg.	½	TRV-80			Focus control
R8	5 Meg.	½	TRV-80			Horiz. centering control
R9	5 Meg.	½	TRV-80			Vert. centering control.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES (ALL RESISTORS ARE 20% TOL. UNLESS OTHERWISE SPECIFIED)	
R10	4700Ω	#		Y1.-V1.-Red	RF Shunt	±5%
R11	1000Ω	#		BTS-1000	Br.-Blk.-Red RF Decoupling	
R12	1 Meg.	#		BTS-1 Meg.	Br.-Blk.-Grn. RF Grid	
R13	100Ω	#			Br.-Blk.-Br. RF Cathode	
R14	560Ω	#			Grn.-Blue-Br. Attenuator Network	
R15	560Ω	#			Grn.-Blue-Br. " "	
R16	390Ω	#			Or.-White-Br. " "	
R17	4700Ω	#			Y1.-V1.-Red Mixer Coil Shunt	±5%
R18	1 Meg.	#		BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid	
R19	1000Ω	#		BTS-1000	Br.-Blk.-Red Mixer Decoupling	
R20	27KΩ	#			Red-V1.-Or. Osc. Grid	±10%
R21	27KΩ	#			Red-V1.-Or. " "	±10%
R22	27Ω	#			Y1.-V1.-Blk. Osc. Cathode	
R23	11KΩ	#			Br.-Br.-Or. 1st Video IF Grid	±5%
R24	150Ω	#			Br.-Grn.-Br. AGC- Network	
R25	150Ω	#			Br.-Grn.-Br. " "	
R26	150Ω	#			Br.-Grn.-Br. " "	
R27	82Ω	#			Gray-Red-Blk. 1st Video IF Cathode	±5%
R28	150Ω	#		BW-½-150	Br.-Grn.-Br. 1st Video IF Decoupling	
R29	10KΩ	#			Br.-Blk.-Or. 2nd Video IF Grid	±5%
R30	82Ω	#			Gray-Red-Blk. 2nd Video IF Cathode	±10%
R31	150Ω	#		BW-½-150	Br.-Grn.-Br. 2nd Video IF Decoupling	
R32	11KΩ	#			Br.-Br.-Or. 3rd Video IF Grid	±5%
R33	82Ω	#			Gray-Red-Blk. 3rd Video IF Cathode	±10%
R34	100KΩ	#		BTS-100K	Br.-Blk.-Yl. AGC Diode Load	
R35	2.2 Meg.	#		BTS-2.2Meg.	Red-Red-Grn. AGC Network	±5%
R36	100KΩ	#		BTS-100K	Br.-Blk.-Yl. Voltage Divider Network	
R37	15KΩ	#		BTS-15K	Br.-Blk.-Grn. Video Amp. Plate	
R38	8200Ω	#		BTS-8200	Gray-Red-Red Video Detector Load	±5%
R39	1 Meg.	#		BTS-1 Meg.	Br.-Blk.-Grn. Video Amp. Grid	±5%
R40	10KΩ	#		BTS-10K	Br.-Blk.-Or. Bias Network	
R41	1 Meg.	#		BTS-1Meg.	Br.-Blk.-Grn. " "	±5%
R42	6800Ω	1		BTA-6800	Blue-Gray-Red Video Amp. Plate	±5%
R43	22KΩ	2		BT-2-22K-5%	Red-Red-Or. Filter	5%
R44	18Ω	5			Surge Limiter	
R45	4700Ω	#		BTS-4700	Y1.-V1.-Red Bleeder	
R46	150KΩ	#		BTS-150K	Br.-Grn.-Br. Picture Tube Cathode	
R47	1 Meg.	#		BTS-1 Meg.	Br.-Blk.-Grn. Sync. Seperator Grid	±5%
R48	68000Ω	#		BTS-6800	Blue-Gray-Red Sync. Seperator Cathode	
R49	220KΩ	#		BTS-220K	Red-Red-Yl. Sync. Seperator Plate	±10%
R50	180KΩ	#		BTS-180K	Br.-Gray-Yl. Phase Correction	
R51	560Ω	#		BTS-560	Grn.-Blue-Br. Bias Voltage Divider	±10%
R52	560Ω	#		BTS-560	Grn.-Blue-Br. " "	±10%
R53	82Ω	#			Gray-Red-Blk. Sound IF Cathode	±10%
R54	470Ω	½		BTS-470	±5% Yl.-V1.-Br. Sound IF Decoupling	±5%
R55	15KΩ	#		BTS-15K	±5% Br.-Grn.-Or. Ratio Detector Diode Load	±5%
R56	15KΩ	#		BTS-15K	±5% Br.-Grn.-Or. " " "	±5%
R57	47KΩ	#		BTS-47K	Yl.-V1.-Or. De-emphasis	
R58	10 Meg.	#		BTS-10 Meg.	Br.-Blk.-Blue Audio Grid	
R59	390KΩ	#		BTS-390K	Or.-White-Yl. Audio Plate	±10%
R60	470KΩ	#		BTS-470K	Yl.-V1.-Yl. Output Grid	±10%
R61	6.8 Meg.	#		BTS-6.8 Meg.	Blue-Gray-Grn. Bias Network	±10%
R62	68Ω	#		BW-½-68	Blue-Gray-Blk. Output Cathode	
R63	4700Ω	#		BTS-4700	Yl.-V1.-Red Filter	
R64	150Ω	1		BW-1-150	Br.-Grn.-Br. " "	±10%
R65	4700Ω	#		BTS-4700	Yl.-V1.-Red Integrator	
R66	4700Ω	#		BTS-4700	Yl.-V1.-Red " "	
R67	10002	#		BTS-1000	Br.-Blk.-Red Vertical Osc. Cathode	
R68	100KΩ	1		BTA-100K	±5% Br.-Blk.-Yl. Vertical Osc. Plate	±5%
R69	470KΩ	#		BTS-470K	Yl.-V1.-Yl. Vert. Osc. Grid	10%
R70	3.3 Meg.	#		BTS-3.3 Meg.	Or.-Or.-Grn. Vertical Osc. Plate	
R71	4.7 Meg.	#		BTS-4.7 Meg.	Yl.-V1.-Grn. Vertical Amp. Grid	
R72	18KΩ	#		BTS-18K	Br.-Gray-Or. Vertical Amp. Cathode	±10%
R73	150KΩ	#		BTS-150K	Br.-Grn.-Yl. Vertical Amp. Grid	
R74	2.2 Meg.	#		BTS-2.2 Meg.	Red-Red-Grn. Voltage Divider	±5%
R75	820KΩ	1		BTA-820K	±5% Gray-Red-Yl. Vertical Amp. Plate	±5%
R76	820KΩ	1		BTA-820K	±5% Gray-Red-Yl. " "	±5%
R77	3.3 Meg.	#		BTS-3.3 Meg.	Or.-Or.-Grn. Feedback Network	
R78	5.6 Meg.	1		BTA-5.6 Meg.	Grn.-Blue-Grn. Vert. Deflection Load	10%
R79	5.6 Meg.	1		BTA-5.6 Meg.	Grn.-Blue-Grn. Vert. Deflection Load	10%
R80	100KΩ	1		BTA-100K	±5% Br.-Blk.-Yl. Horizontal Oscillator Plate	±5%
R81	470Ω	#		BTS-470	Yl.-V1.-Red Horizontal Oscillator Grid	
R82	1000Ω	#		BTS-1000	Br.-Blk.-Red Horizontal Oscillator Cathode	
R83	220KΩ	#		BTS-220K	Red-Red-Yl. Horizontal Oscillator Grid	
R84	1.2 Meg.	#		BTS-1.2 Meg.	Br.-Red-Grn. Horizontal Oscillator Plate	
R85	10KΩ	#		BTS-10K	Br.-Blk.-Or. Filter	
R86	4.7 Meg.	#		BTS-4.7 Meg.	Yl.-V1.-Grn. Horizontal Output Grid	
R87	4.7 Meg.	#		BTS-4.7 Meg.	Yl.-V1.-Grn. " "	
R88	47KΩ	2		BT-2-47K	Yl.-V1.-Or. Horizontal Output Plate	±10%
R89	47KΩ	2		BT-2-47K	Yl.-V1.-Or. " "	±10%
R90	4.7 Meg.	#		BTS-4.7 Meg.	Yl.-V1.-Grn. Horizontal Deflection Load	
R91	4.7 Meg.	#		BTS-4.7 Meg.	Yl.-V1.-Grn. " "	
R92	47Ω	1			Yl.-V1.-Blk. Osc. Filament Shunt.	
R93	60Ω	10			Filament Dropping	±10%
R94	75002	#			V1.-Grn.-Red H. V. Osc. Grid	±5%
R95	58Ω	#			Blue-Gray-Blk. Parasitic Suppressor	±10%
R96	100Ω	#			Br.-Blk.-Br. " "	±10%
R97	68Ω	#			Blue-Gray-Blk. " "	±10%
R98	100KΩ	1		BTA-100K	Br.-Blk.-Yl. H. V. Filter	±10%
R99	1 Meg.	#		BTS-1 Meg.	±5% Br.-Blk.-Grn. Voltage Divider	±5%
R100	3.3 Meg.	#		BTS-3.3 Meg.	Or.-Or.-Grn. " "	±10%
R101	3.3 Meg.	1			Or.-Or.-Grn. Voltage Divider	10%
R102	3.3 Meg.	1			Or.-Or.-Grn. " "	10%
R103	4.7 Meg.	1			Yl.-V1.-Grn. " "	10%
R104	4.7 Meg.	1			Yl.-V1.-Grn. " "	10%
R105	1200Ω	1		BW-1-1200	Br.-Red-Red Filter	
R106	3.9 Meg.	1			Or.-White-Grn. Voltage Divider	10%
R107	3.9 Meg.	1			Or.-White-Grn. " "	10%
R108	3.3 Meg.	#		BTS-3.3 Meg.	Or.-Or.-Grn. " "	±10%
R109	3.3 Meg.	#		BTS-3.3 Meg.	Or.-Or.-Grn. " "	±10%
R110	680Ω	1		BW-2-680	Filter	±10%
R111	18Ω	5			Surge Limiter	±10%
R112	1200	1		BW-1-1200	Br.-Red-Red Filter	

Note-Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	INSTALLATION NOTES
T1	2.6KΩ	3.3Ω	250Ω	.6Ω		A-3876*	RO-2	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

TRANSFORMER (H.V. OSC.)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T2	1.5Ω	650Ω	38Ω	0Ω				

SPEAKER

ITEM No.	RATING: FIELD RES.	RATING: V. C. IMP.	REPLACEMENT DATA: AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	3.3Ω		ST-113 MOD. P4-X/*	4A1/*	
SP1 B	PM	3.3Ω		ST-117 MOD-P8-T	8A21	Model 710 only.
	CONE DIA.	V. C. DIA.				
SP2A B	4" 7 1/4"	9/16" 3/4"				* Drill and tap magnet frame. / Mount on original bracket or fabricate new mounting bracket. Remount output XFMR.

AUTOMATIC
MODELS TV-707, TV-709, TV-710

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES	
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.		
L1	.074A	61Ω	2.8 Henries		C-2304		C-2974		

COILS (RF-IF)

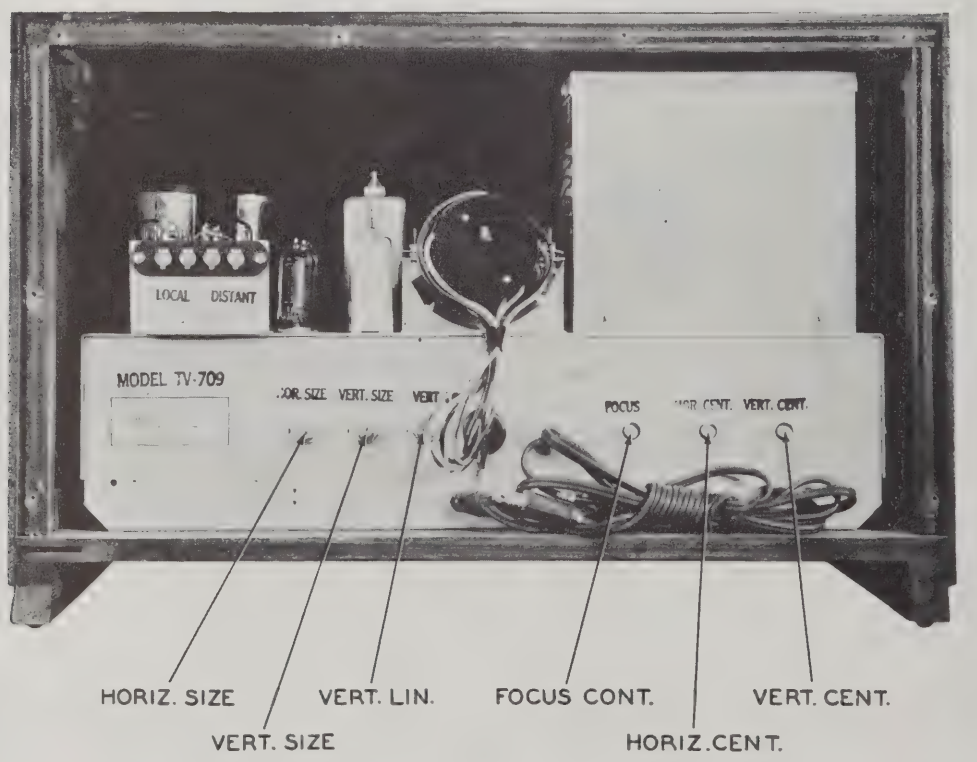
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
L2	Ant. Input	.2CT				
L3	RF Strap Inductance	0Ω				
L4	RF End Inductance	0Ω		3L7		
L5	RF End Inductance	0Ω		3L7		
L6	RF Plate Chk.	0Ω				
L7	Osc. Coils	0Ω				
L8	1st IF Coil	.2Ω		IF-17		
L9	2nd IF Coil	.2Ω		IF-17		
L10	3rd IF Coil	.1Ω	.1Ω	IF-37		
L11	4th IF Coil	.1Ω	.1Ω	IF-47		
L12	Peaking	9.5Ω				160 Microhenry Coil, wound on 33KΩ resistor
L13	Peaking	20Ω				Inductance-520 Microhenries
L14	Peaking	10Ω				160 Microhenry Coil, wound on 33KΩ resistor
L15	Peaking	20Ω				Inductance-520 Michrohenries
L16	Sound IF Trap	2Ω		ST-7		
L17	Ratio Det.	4Ω	.8Ω	RD-7		
L18	Fil. Choke	0Ω				
L19	Fil. Choke	0Ω				

SELENIUM RECTIFIER

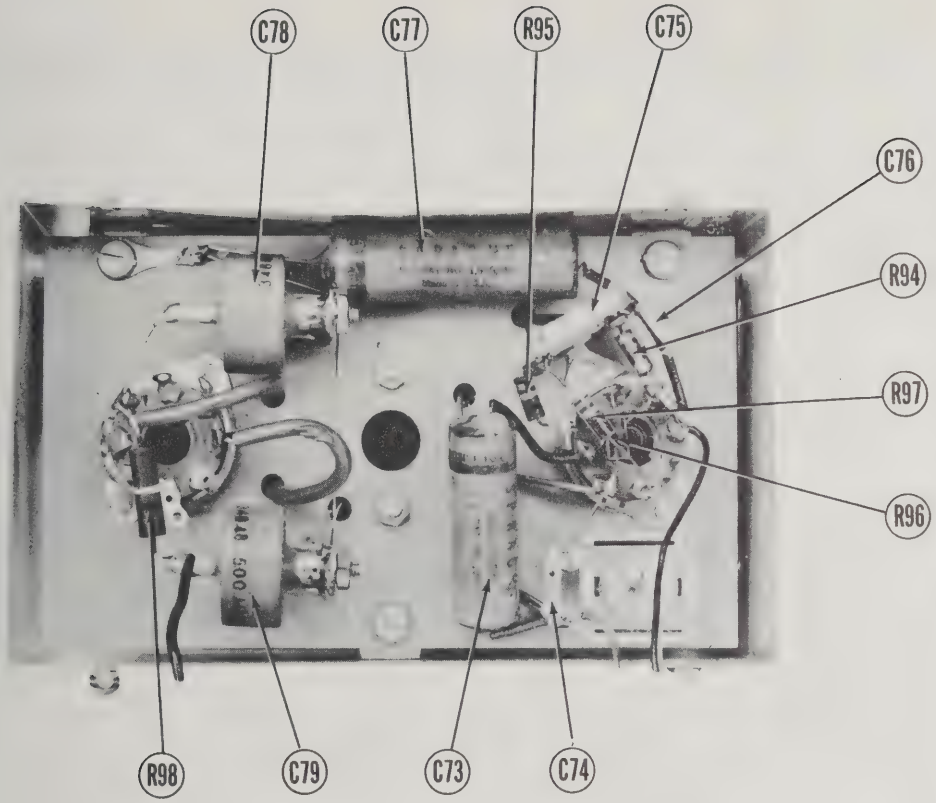
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AUTOMATIC PART No.			
M1	.160A				

MISCELLANEOUS

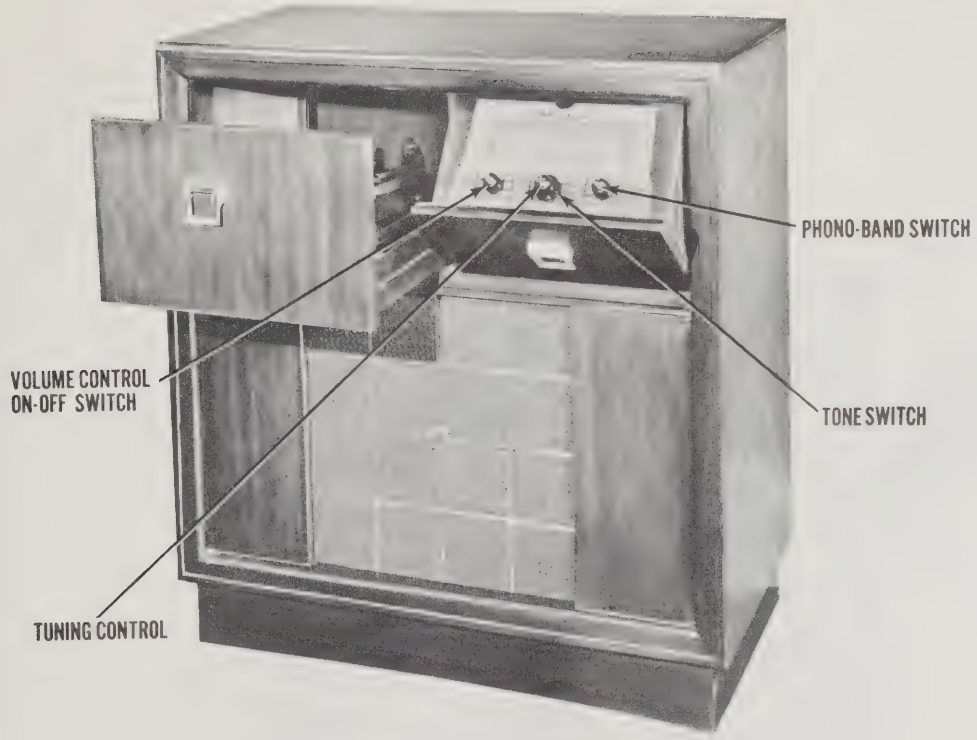
ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Band Switch		



CABINET-REAR VIEW



HIGH VOLTAGE SUPPLY-BOTTOM VIEW



BENDIX MODEL 95M3

TRADE NAME	Bendix, Model 95B3, 95M3, 95M9
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Maryland
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(NINE)	Types 6BA6 FM RF Amp., 12AT7 Converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6T8 DET-AVC-AF, 6SN7GT AF-Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-120 Volts AC — RATING .79 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 88-108MC

DIAL CORD DRIVE

BENDIX
MODELS 95B3, 95M3, 95M9

HOWARD W. SAMS & CO., INC. • Indianapolis 7 Indiana

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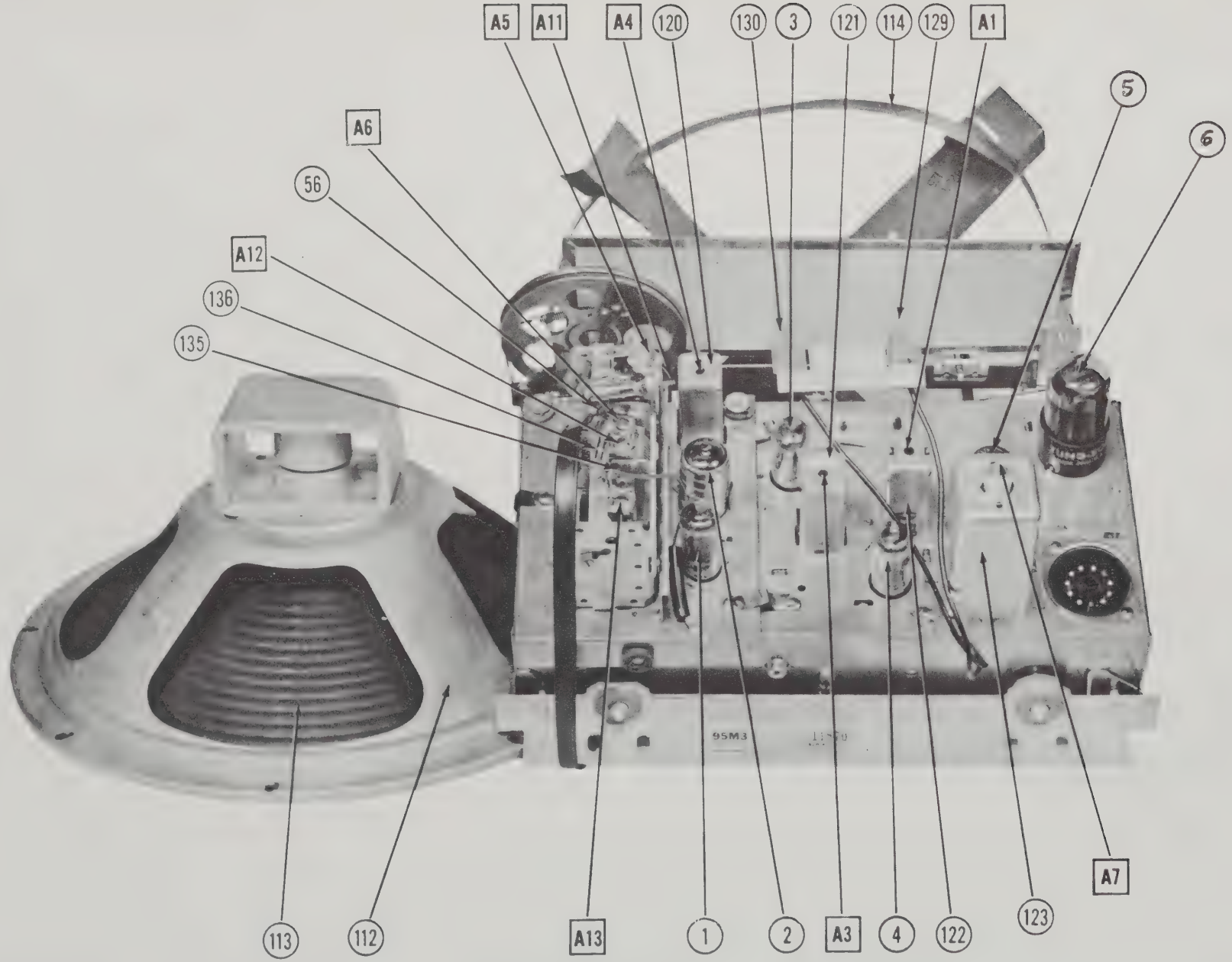
A5
A11
A4
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3
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A1
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A6
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A12
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112
A13
1
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A3
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123
A7

BENDIX
MODELS 95B3, 95M3, 95M9 PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	FM RF Amp.	6BA6	6BA6	7M	
2.	Converter	12AT7	12AT7		
3.	1st IF Amp.	6BA6	6BA6	7M	
4.	2nd IF Amp.	6BA6	6BA6	7M	
5.	DET-AVC-AF	6T8	6T8		
6.	AF-Phase Inv.	6SN7GT	6SN7GT	8AD	
7.	Power Output	6K6GT	6K6GT	7S	
8.	Power Output	6K6GT	6K6GT	7S	
9.	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	20	450	CE3A03	AF4444J ‡	UP2222		DY-4X20-	EL-420‡	◓ Filter
B	20	450			45‡		450‡		■ Filter
C	40	450							▲ Filter
11	5	50	CE1T06	PRS-150-4	BR550		M-4-450	TA-55	Stabilizing Cap.
12	.006	600	CP6T20	684-006	GT6D6		ST-6-006	TC-26	Line Filter
13	.006	600	CP6T20	684-006	GT6D6		ST-6-006	TC-26	" "
14	.05	400	CP4T40	484-05	GT4S5		ST-4-05	TC-15	Bias Filter
15	.002	600	CP6T12	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	Output Plate Bypass
16	.002	600	CP6T12	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	" " "
17	.03	400	CP4T36	484-03	GT4S3		ST-6-03	TC-13	Audio Coupling
18	.03	400	CP4T36	484-03	GT4S3		ST-6-03	TC-13	" "
19	.03	400	CP4T36	484-03	GT4S3		ST-6-03	TC-13	" "
20	.004	400	CP3S16	484-004	GT6D4	GP2M-003	ST-6-004	TC-24	Tone Compensation
21	.006	600	CP6T20	684-006	GT6D6	GP2M-005	ST-6-006	TC-26	" "
22	.05	400	CP4T40	484-05	GT4S5		ST-4-05	TC-15	Bias Filter
23	.03	400	CP4T36	484-03	GT4S3		ST-6-03	TC-13	AVC Filter
24	.03	400	CP4T36	484-03	GT4S3		ST-6-03	TC-13	" "
25	630	500	CM3A42	1468-00075	1W5T7	GP2K-750	MW.5-37	1FM-37	Phase Inv. Feedback
26A	5000	300	Note	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Audio Coupling
B	220	300	Note	1468-0002	5W5T2	GP2K-250	MO.5-32	1FM-32	AF Plate Bypass
27	47	300	CC8B30	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Diode Filter
28	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Audio Coupling
29	100	500	CM5A22	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Tone Compensation
30	1000	300	CC9M50	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	De-emphasis
31	150	300	CC9B36	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	Diode Load Cap.
32	1000	300	CC9M50	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	RF Bypass
33	3.3	300	CC0A16						Compensating
34	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Decoupling
35	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Screen Bypass
36	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Cathode Bypass
37	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass Power Supply
38	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Plate Decoup.
39	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Screen Bypass
40	470	300	CC9M42	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	2nd IF Coupling
41	470	300	CC9M42	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	1st IF Coupling
42	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Mixer Plate Decoupling
43	5000	300	CC0M00	1477-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Decoupling
44	220	300	CC0A38	1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	Osc. Feedback
45	47	300	CC8B30	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
46	15	300	CC0A24	1468-000025	5W5Q2	GP1K-15	MOS.5-42	MS-415	Osc. Feedback
47	12	300	CC8B23			NP0K-12			Fixed Trimmer
48	1000	500	CM3A42	1468-001	1W5L1	GP2L-001	MW.5-21	1FM-21	Mixer Catn. Bypass
49	4.7	300	CC0A18	1469-000005	5R5V5	NP0K-5	MOS.5-55	MS-55	Fixed Trimmer
50	470	300	CC9M42	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Coupling
51	1000	500	CC9M50	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	" "
52	12	300	CC0A23	1468-000025	5W5Q2	GP1K-25	MO.5-42	MS-42	" "
53	2.2	300	CC0A14			NP0K-3			Osc. Coupling
54	1000	300	CC9M50	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	RF Screen Bypass
55	220	300	CC9A38	1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	RF Coupling
56	4.7	300	CC0A18	1468-000005	5W5V5	NP0K-5	MO.5-55	MS-55	Ext. Ant. Coupling
57	470	500	CC9M42	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	RF Bypass Note 1
58	1000	500	CC9M50	1468-001	1W5L1	GP2L-001	MO.3-21	1FM-21	Filament Bypass
59	5000	300	CC0M00	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	" "

Note Items 26A, 26B, 90 and 91 are combined into one unit obtainable under MFGRS Part No. AC0C01
Note 1. Not used in all models
‡ Parallel sections to obtain desired capacity.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
110	117VAC .75A	660VAC CT @ .140MA	5VAC @ 2A	6.3VAC @ 3.5A	TP0M01	P-6014 #	PV-145 #	P-2952 #

Drill new mounting holes and add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
111	14000Ω CT	4.3Ω	370Ω CT	.4Ω	TA-0014	A-2312	RO-305	A-2901 †	† Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-101 *		* Replace output transformer to match 6-8Ω voice coil.
112	PM	4.3Ω	SP1R02	MOD.P12-T	12A4	
	C. E DIA.	V. C. DIA.				
113	11 1/2"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: MEISSNER PART No.
114	Loop Ant.		1.5Ω	ALOZ15	
115	FM Dipole Ant.		0Ω		
116	FM Ant.		0Ω	LA0F01	
117	FM RF		0Ω	LI0F01	
118	AM Osc.		12Ω	LO7B00	
119	FM Osc.		0Ω	LO7F00	
120A	AM 1st IF		10Ω	TI0C12	
B	FM 1st IF		1Ω		
121A	AM 2nd IF		9Ω	TI0D20	
B	FM 2nd IF		1Ω		
122	AM 3rd IF	10Ω	10Ω	TI0D18	
123	Ratio Det.	1Ω	0Ω	TI0L17	
124	RF Choke		.1Ω	LF0A01	
125	RF Choke		.1Ω	LF0A01	
126	Fil. Choke		.1Ω	LF0A00	
127	Fil. Choke		.1Ω	LF0A00	
128	Fil. Choke		0Ω	LF0C00	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA:	NOTES
129	Bayonet	6-8V	0.25A	blue			Type #44
130	Bayonet	6-8V	0.25A	Blue			Type #44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
131		LT-1K	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	
60A	1 Meg.	½	RV4S14	D19-137X	T-112	Volume control tapped @ 500KΩ
B	Shaft		Not Req.	A	Not Req.	Attach to 60A Per Instructions
C	Switch		Not Req.	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	BENDIX PART No.	IRC PART No.		
61	100KΩ	½	RC22A104M	BTS-100K	Br.-Blk.-Yl.	FM RF Grid
62	47KΩ	½	RC23A473M	BTS-47K	Yl.-Vi.-Or.	FM RF Screen
63	100KΩ	½	RC22A104M	BTS-100K	Br.-Blk.-Yl.	Converter Grid
64	2.2 Meg.	½	RM2F66	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
65	3300Ω	½	RC23A332M	BTS-3300	Or.-Or.-Red	Converter Cathode
66	47KΩ	½	RC23A473M	BTS-47K	Yl.-Vi.-Or.	Converter Decoupling
67	150KΩ	½	RC22A154M	BTS-150K	Br.-Grn.-Yl.	AM Osc. Plate Load
68	4700Ω	1	RC24A472M	BTA-4700	Yl.-Vi.-Red	FM Osc. Plate Load
69	22KΩ	½	RC22A223M	BTS-22K	Red-Red-Or.	Osc. Grid
70	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
71	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	" "
72	33KΩ	1	RC24A333M	BTA-33K	Or.-Or.-Or.	1st IF Screen
73	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	" " "
74	220Ω	½	RC23A221M	BW-½-220	Red-Red-Br.	Decoupling
75	1000Ω	½	RC22A102M	BTS-1000	Br.-Blk.-Red	1st IF Decoupling
76	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	2nd IF Grid
77	220Ω	½	RC22A221M	BW-½-220	Red-Red-Br.	2nd IF Cathode
78	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	2nd IF Screen
79	1000Ω	½	RC22A102M	BTS-1000	Br.-Blk.-Red	2nd IF Plate Decoupling
80	220KΩ	½	RC22A224M	BTS-220K	Red-Red-Yl.	Diode Filter
81	68KΩ	½	RC22A683K	BTS-68K	Blue-Gray-Or.	Diode Load
82	1 Meg.	½	RC22A105M	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
83	33Ω	½	RC22A330M	BW-½-33	Or.-Or.-Blk.	Balancing
84	33KΩ	½	RC23A333M	BTS-33K	Or.-Or.-Or.	De-emphasis
85	15kΩ	½	RC22A153K	BTS-15K	Br._Grn.-Or.	Ratio Det. Diode Load
86	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	AVC Network
87	10 Meg.	½	RC22A106M	BTS-10 Meg.	Br.-Blk.-Blue	" "
88	10 Meg.	½	RC22A106M	BTS-10 Meg.	Br.-Blk.-Blue	1st AF Grid
89	4.7 Meg.	½	RC22A475M	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Bias
90	250KΩ	½	See Note	BTS-270K		1st AF Plate Load
91	500KΩ	½	See Note	BTS-470K		2nd AF Grid
92	270KΩ	½	RC22A274J	BTS-270K	Red-Vi.-Yl.	Tone Compensation
93	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	" "
94	10 Meg.	½	RC22A106M	BTS-10 Meg.	Br.-Blk.-Blue	" "
95	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	" "
96	1500Ω	½	RC22A152K	BTS-1500	Br.-Grn.-Red	Phase Inv. Cathode
97	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	2nd AF Plate Load
98	47KΩ	½	RC22A473M	BTS-47K	Yl.-Vi.-Or.	Phase Inv. Plate Load
99	390KΩ	½	RC22A394J	BTS-390K	Or.-White-Yl.	Output Grid
100	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	" "
101	150KΩ	½	RC22A154M	BTS-150K	Br.-Grn.-Yl.	Tone Compensation
102	150KΩ	½	RC22A154M	BTS-150K	Br.-Grn.-Yl.	" "
103	4.7 Meg.	½	RC22A475M	BTS-4.7 Meg.	Yl.-Vi.-Grn.	Bias
104	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	Output Grid
105	470KΩ	½	RC22A474M	BTS-470K	Yl.-Vi.-Yl.	" "
106	390Ω	2	RC25A391K	BW-2-390	Or.-White-Br.	Output Cathode
107	1500Ω	½	RC22A152K	BTS-1500	Br.-Grn.-Red	Feedback
108A	750Ω	3	RW2M03	AB-750		Filter
B	750Ω	3		AB-750		Filter
109	15Ω	1	RC23A150M	BW-1-15	Br.-Grn.-Blk.	Bias See Note 2
136	1000Ω	½	RC22A102M	BTS-1000	Br.-Blk.-Red	Ext. Ant. Coupling

Note. Item 26A, 26B, 90 and 91 are combined into one unit obtainable under MFGRS Part #AC0C01.

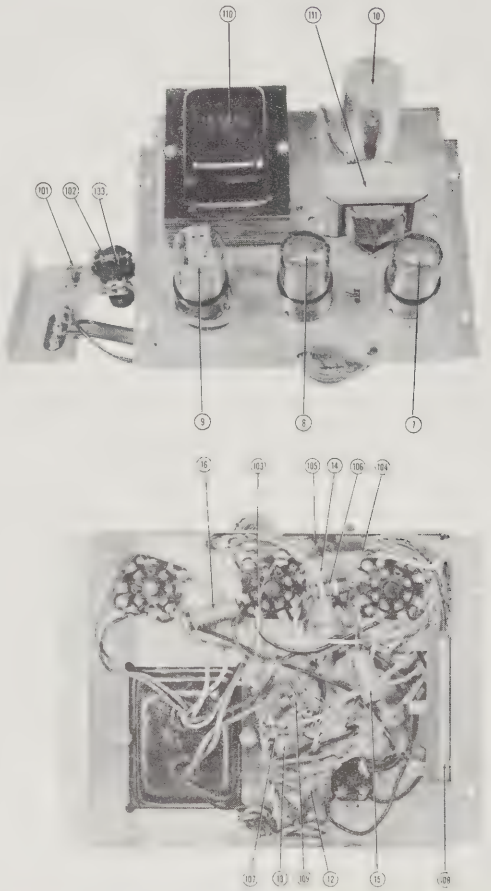
Note 2. Some models use two 33Ω resistors in parallel in this application.

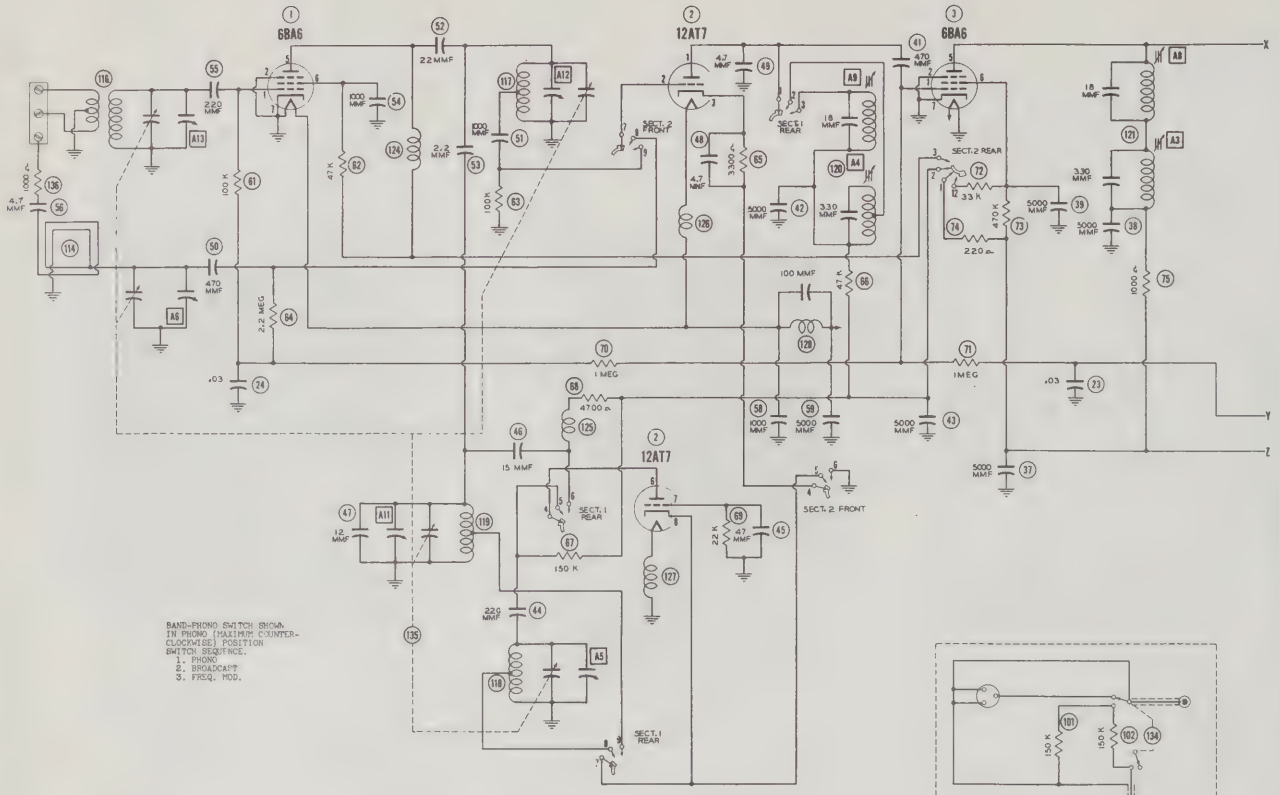
DATE 4/49 498-7 SET #60 FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

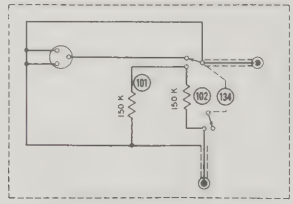
MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
132	Switch	SR3F00	Band
133	Switch	SS1C02	Tone
134	Switch		Changer
135	2 Gang Var. Cap.	CV0D01	(21-522MMF, 31-207MMF)
A5	Trimmer	CT1A20	BC Osc. Adj.
A11	Trimmer	CT1B05	FM Osc. Adj.
	Dial Pointer	IDOM21	
	Dial Scale	DS0C09	
	Knob	KC0B16	Control(Models 95M3, 95M9)
	Knob	KC0L03	Control(Model 95B3)
	Knob	KY0B02	Concentric(Models 95M3, 95M9)
	Knob	KY0L00	Concentric(Model 95B3)
	Cabinet	ZW7G09	Model 95B3
	Cabinet	ZW7G08	Model 95M3
	Cabinet	ZW7G07	Model 95M9





BAND-PHONO SWITCH SHOWN IN PHONO (MAXIMUM COUNTER-CLOCKWISE) POSITION
SWITCH SEQUENCE.
1. PHONO
2. BROADCAST
3. FREQ. MOD.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TIN-S
* 1	6BA6	-.4VDC	0V	0V	6.3VAC	225VDC	75VDC	0V		
* 2A	12AT7	165VDC	0V	4.5VDC	6.3VAC	6.3VAC	155VDC	4-25VDC	0V	0V
2B	12AT7	225VDC	-.1VDC	4.5VDC	6.3VAC	6.3VAC	40VDC	4-1.2VDC	0V	0V
3	6BA6	-.4VDC	0V	0V	4.2VAC	280VDC	35VDC	0V		
4	6BA6	0V	0V	0V	6.3VAC	280VDC	30VDC	4.5VDC		
* 5A	6T8	-.4VDC	-.7VDC	-1.4VDC	0V	6.3VAC	-.7VDC	0V	-.6VDC	120VDC
5B	6T8	-.4VDC	-.4VDC	-.4VDC	0V	6.3VAC	-4.4VDC	0V	-.6VDC	115VDC
6	6BN7GT	0V	120VDC	4.5VDC	0V	130VDC	4.7VDC	6.3VAC	0V	
7	6K6GT	0V	0V	310VDC	300VDC	0V	0V	6.5VAC	26.5VDC	
8	6K6GT	0V	0V	310VDC	295VDC	0V	0V	6.5VAC	26.5VDC	
9	5Y3GT	0V	320VAC	0V	315VAC	0V	315VAC	0V	320VDC	

* VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TIN 9
* 1	6BA6	2.5 Meg.	0Ω	0Ω	.2Ω	*1.6KΩ	*50KΩ	0Ω		
* 2A	12AT7	*50KΩ	100KΩ	4KΩ	.5Ω	.5Ω	*6.5KΩ	22KΩ	0Ω	.2Ω
2B	12AT7	*50KΩ	0 Meg.	3.3KΩ	.5Ω	.5Ω	*150KΩ	22KΩ	1.5Ω	.2Ω
3	6BA6	2.5 Meg.	0Ω	0Ω	.2Ω	*.4KΩ	*450KΩ	0Ω		
4	6BA6	470KΩ	0Ω	0Ω	.2Ω	*5KΩ	*52KΩ	220Ω		
* 5A	6T8	Inf.	13KΩ	Inf.	0Ω	.2Ω	300KΩ	0Ω	14 Meg.	*250KΩ
5B	6T8	Inf.	13KΩ	Inf.	0Ω	.2Ω	300KΩ	0Ω	14Meg.	*250KΩ
6	6BN7GT	700KΩ	*52KΩ	1.6KΩ	470KΩ	*52KΩ	1.5KΩ	.2Ω	0Ω	
7	6K6GT	Inf.	0Ω	*190Ω	*75Ω	300KΩ	Inf.	.2Ω	390Ω	
8	6K6GT	Inf.	0Ω	*160Ω	*75Ω	300KΩ	5 Meg.	.2Ω	390Ω	
9	5Y3GT	Inf.	100KΩ	Inf.	130Ω	Inf.	135Ω	Inf.	100KΩ	

* Measured from pin 2 of 5Y3GT.

THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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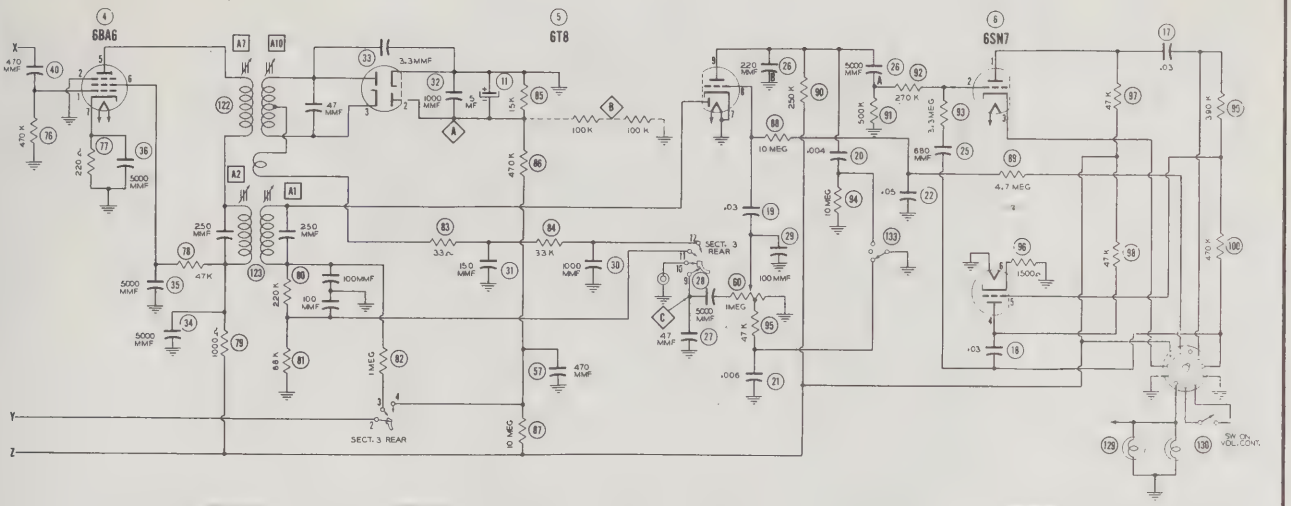

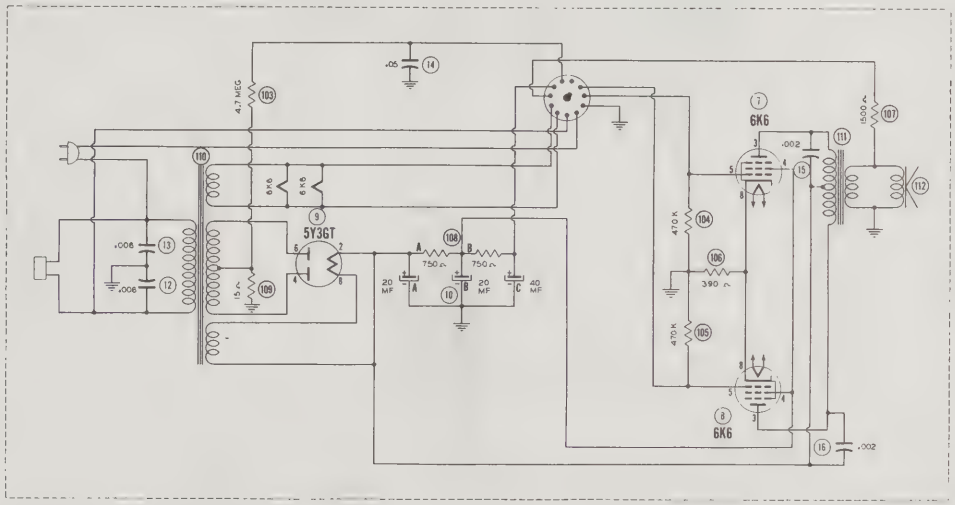

IF=455 KC AM

IF=10.7 MC FM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Before starting alignment, check the following lead dressing. Hum may be introduced if the leads connecting to the On-Off switch are dressed toward the base of the 12AT7 tube. The leads should be against the chassis side approximately 1/2 inch from bottom of chassis. Capacitor 38 should have shortest possible leads and be dressed beneath resistor 74. Oscillations may also occur if AM oscillator coil is not positioned correctly. Recommended spacing is as follows:

9/16" between fron of sub-chassis and Osc. coil
3/4" between bottom of sub-chassis and Osc. coil
1/2" between Osc. Coil and end of main chassis.

To set pointer, fully close the tuning capacitor and set pointer at extreme left-hand reference mark on dial backplate.

Calibration marks on bottom edge of dial backplate are as follows: (Top Row-Left to Right Extreme left hand limit, 580KC, 965KC, 1475KC. (Bottom Row-Left to Right) Left hand reference, 90MC, 97MC, and 106MC.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	1000MMF	High side to pin 2 12AT7 (V2). Low side to chassis.	455KC	AM (Center Position)	Tuning cap fully open	Across Voice Coil	A1, A2 A3, A4	Short A5 to chassis. Adjust A1, A2, A3, and A4 for maximum output.
2.	1000MMF	"	1475KC	"	1475KC Calibration Mark	"	A5	Remove short. Adjust for maximum output.
3.	100MMF	High side Ext. AM Antenna lead. Low side to chassis. Check calibration.	1400KC	"	Tune for maximum output.	"	A6	Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Before starting step 5, connect two matched (± 5%) 100KΩ resistors connected in series from pin 2 6T8 (V5) to chassis. Connect VTVM DC Probe to jumction of these to resistors (Point B and common lead to Point C (See Schematic).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	1000MMF	High side to pin 2 12AT7 (V2). Low side to chassis.	10.7MC (Mod @ 400~)	FM (fully clockwise)	Set at point of non-interference)	DC Probe at Point (A) Common lead to chassis.	A7,A8 A9	Short A11 to chassis. Adjust for maximum output.
5.	1000MMF	"	"	"	"	See Prealignment Instructions.	A10	Adjust for zero reading. A positive and negative reading are on either side of correct setting. After adjusting remove two 100KΩ resistors and short across A11.

Repeat steps 4 and 5 until adjustments of A7, A8, and A9 are not required to obtain the zero reading in step 5.

If visual alignment check is not desired, continue with step 7.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
4.	1000MMF	High side to pin 1 6BA6 (V3). Low side to chassis.	10.7MC	FM	Set at point of non-interference	Vert. Amp to point (A) Low side to chassis.	A7,A8	Disconnect stabilizer cap. Adjust for maximum amplitude and symmetry as per fig 1.
5.	1000MMF	High side to pin 2 12AT7 (V2). Low side to chassis.	"	"	"	"	A9	Adjust for maximum amplitude and symmetry as per fig 1.
6.	1000MMF	"	"	"	"	Vert. Amp to point (C) Low side to chassis.	A10	Reconnect stabilizer cap. Adjust for maximum straightness of crossover line with crossover. Point occurring at center of Pattern as per fig 2.

FM OSCILLATOR & RF AMP ALIGNMENT

In step 7, it is possible to adjust the oscillator on low frequency side of the incoming signal which is not correct. With receiver set at 106MC., turn signal generator to 84.6MC. If oscillator is operating on correct side of the signal A beat note will not be heard. If note is heard, it will be necessary to readjust A11 so Oscillator operates on the other side of the incoming signal.

If calibration is not correct, the inducatnce of the FM Oscillator coil must be adjusted. If dial pointer is on low frequency side, the coil inductance is too low and the coil turns must be expanded slightly. Repeat step 7 until correct calibration is obtained.

To correctly adjust the inductance of the RF Coil, leave VTVM connected between Point A and chassis. and tune receiver to 90MC. Insert Iron core end of a tuning wand into the RF Coil. If reading on VTVM increases, the coil inductance is too low and the coil turns must be compressed slightly. If reading decreases, inser brass slug end of tuning wand. If reading increases the coil turns must be expanded slightly. Correct adjustment is obtained when insertion of either end of tuning wand causes the reading. To decrease.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	See Fig 3.	Across FM Ant. terminal.	106MC	FM	106MC Calibration Mark.	DC Probe to point A. Common lead to chassis.	A11, A12, A13	Adjust for maximum output.

Check calibration at 97MC and 90MC.

FIG. 1

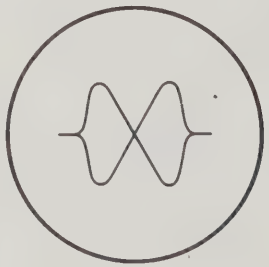
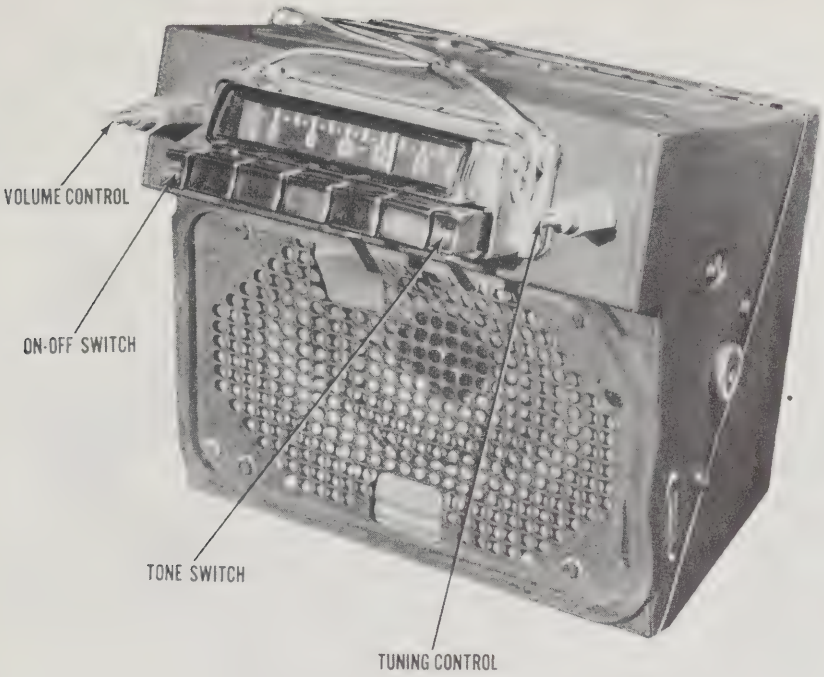


FIG. 2



CADILLAC, MODEL 7256609

TRADE NAME Cadillac, Model 7256609
SUPPLIER Cadillac Motor Car, Div. of General Motors, Detroit, Michigan
TYPE SET Battery Operated Custom-Built Automotive Superheterodyne Receiver.
TUBES (SEVEN) Types 6SK7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SR7 DET-AVC-AF, (2) 6V6GT Power Output, 0Z4 Rectifier.

POWER SUPPLY 6 Volt Storage Battery RATING 6.8 Amp. @ 6 Volts DC
TUNING RANGE—BROADCAST 550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

In steps 2 thru 5, dummy antenna should be exactly 68MMFD. Use of any other value may result in misalignment.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (Grid) of 6SA7. Low side to chassis.	260KC	Tuning slugs fully out	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	68MMFD	High side to Ant. socket. Low side to chassis.	1615KC	Tuning slugs fully out	Across Voice Coil	A5, A6 A7	Adjust for maximum output.
3.	68MMFD	High side to Ant. socket. Low side to chassis.	600KC	Tune for maximum output	Across Voice Coil	A8, A9	Check setting of oscillator core. Slotted end of core should be 1 3/4" from the mounting end of coil form. Adjust A8, and A9 for maximum output.
4.	68MMFD	High side to Ant. socket. Low side to chassis.	1615KC	Tuning slugs fully out	Across Voice Coil	A6, A7	Adjust for maximum output.
5.	68MMFD	High side to Ant. socket. Low side to chassis.	1430KC	Tune for maximum output.	Across Voice Coil		Adjust pointer adjustment screw so that pointer reads 1430KC on dial.

With receiver installed in car, and antenna fully extended, tune in weak station near 1400KC and adjust A7 for maximum volume.

1. Make up a list of stations desired to be set up.
2. Pull button for first station to the right and out.
3. Using manual tuning control, tune in this station selected.
4. Push button in firmly until it snaps.
5. To check adjustment, detune receiver manually and retune with button.
6. If adjustment is incorrect, repeat step 2, 3, and 4.
7. To set up the remaining buttons follow the procedure outlined in steps 2 thru 6.

CADILLAC
MODEL 7256609

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PARTS LIST AND DESCRIPTIONS

CADILLAC MODEL 7256609

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CADILLAC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6SK7	6SK7	8N	
V2	Converter	6SA7	6SA7	8R	
V3	IF Amp	6SK7	6SK7	8N	
V4	DET-AVC-AF	6SR7	6SR7	8Q	
V5	Power Output	6V6GT	6V6GT	7AC	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Rectifier	0Z4	0Z4	4BM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CADILLAC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	7240724	AF44J4A	UP2245C	DY-312	EL-322	▲ Filter
C1B	20	400						■ Filter
C1C	20	25						Cathode Bypass
C2	220	500	7236105	1468-0002	5W5T2	MO.5-32	1FM-32	RF Coupling
C3	2200	300	1217744					Fixed Padder Cer.
C4	68	500	1212359	1468-000075	5W5Q7	MOS.5-47	1FM-475	RF Coupling
C5	180	300	7257424					Fixed Trimmer Cer.
C6	.05	400	7236842	484-05	GT2S5	ST-4-05	TM-15	AVC Filter
C7	10	500	1215189	1468-00001	5W5Q1	MO.5-41	MS-41	IF Coupling
C8	.05	400	7230892	484-05	GT4S5	ST-4-05	TM-15	Decoupling
C9	100	500	1210275	1468-0001	5Q5T1	MO.5-31	1FM-31	AF Plate Bypass
C10	.01	400	7237870	484-01	GT4S1	ST-4-01	TM-11	Audio Coupling
C11	390	500	1217740	1468-0004	5Q5T4	MO.5-34	1FM-34	Tone Compensation Note
C12	.1	400	7238768	484-1	GT4F1	ST-4-1	68P21	Audio Coupling
C13	.0015	600	7236134	1084-001	GT16D1	STM-16-001	TR-21	Output Plate Bypass
C14	.015	600	7237719	1084-015	GT6S15	STM-16-015	MB-115	Tone Compensation
C15	.005	1000	7233769	1084-005	GT16D5	STM-16-005	MB-25	Tone Compensation
C16	.006	1600	7240906	1084-006	GT16D6	STM-16-006	MB-26	Buffer

Note: Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CADILLAC PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1	300KΩ	½	7257791			Volume control tapped @ 60KΩ

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CADILLAC PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	15KΩ	2	7233653	BT-2-15K	Br.-Grn.-Or.	RF Screen
R3	2.2 Meg.	½	1214563	BTS-2.2 Meg.	Red-Red-Grn.	RF Grid
R4	15KΩ	1	7237595	BTA-15K	Br.-Grn.-Or.	RF Plate Load
R5	100Ω	½	1213217	BW-½-100	Br.-Blk.-Br.	RF Cathode
R6	6.8 Meg.	½	1215563	BTS-6.8 Meg.	Blue-Gray-Grn.	AVC Network
R7	22KΩ	½	1214550	BTS-22K	Red-Red-Or.	Osc. Grid
R8	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network
R9	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	Diode Load
R10	1000Ω	½	1213235	BTS-1000	Br.-Blk.-Red	AF Cathode
R11	1000Ω	½	1213235	BTS-1000	Br.-Blk.-Red	AF Cathode
R12	1.5 Meg.	½	1213285	BTS-1.5 Meg.	Br.-Grn.-Grn.	Diode Load
R13	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	AF Grid
R14	27KΩ	1	1213342	BTA-27K	Red-Vi.-Or.	AF Plate Load
R15	330Ω	1	7233773	BW-1-330	Or.-Or.-Br.	Output Cathode
R16	1800Ω	3	1214573	*	Br.-Gray-Red	Filter
R17	220Ω	1	7237994	BW-1-220	Red-Red-Br.	Hash Suppression
R18	330KΩ	½	1214557	BTS-330K	Or.-Or.-Yl.	AVC Network

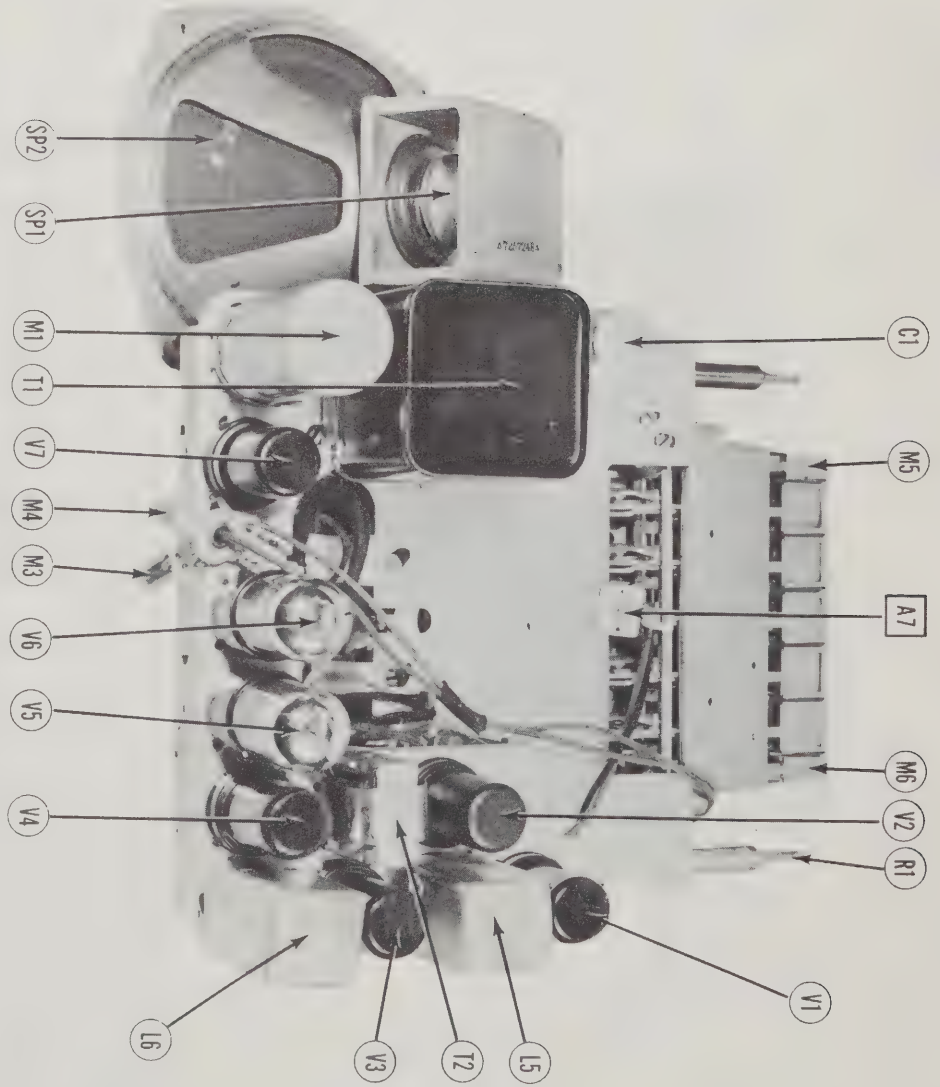
* Use a BT-2-5600 and ABT-2-2700 in parallel for this replacement.

TRANSFORMER VIBRATOR

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CADILLAC PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
T1	6VDC CT	560VAC CT			7255881	P-4065	T22R20†	

† Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (INPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CADILLAC PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
T2				1700Ω CT	7256432				

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA CADILLAC PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
T3	11.5KΩ CT	5Ω	360Ω CT	.2Ω	7256907	A-3850†	T22S47†	A-2936‡	† Drill mounting holes. ‡ Solder to original bracket

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA CADILLAC PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP				
SP1	PM	5Ω	7257248		69A3	
	CONE DIA.	V. C. DIA.				
SP2	6 1/8" x 9 1/8"	1"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CADILLAC PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Ant. Load Coil		11Ω	7257391	
L2	Ant. Choke Coil		4Ω	7240251	
L3	RF Coil		11Ω	7257391	
L4	Osc. Coil	.5Ω	4Ω	7256750	
L5	Input IF	52Ω	54Ω	7257832	16-6652
L6	Output IF	27Ω		7256932	
L7	Hash Choke		0Ω	7241708	
L8	Spark Noise Choke		0Ω	1217846	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA CADILLAC PART No.	REPLACEMENT DATA CORNELL-DUBILIER PART No.	REPLACEMENT DATA RADIART PART No.	INSTALLATION NOTES
M1	Interrupter	6VDC	115∿	8542	C00	5300	Original Mfg. Part No. 7239124

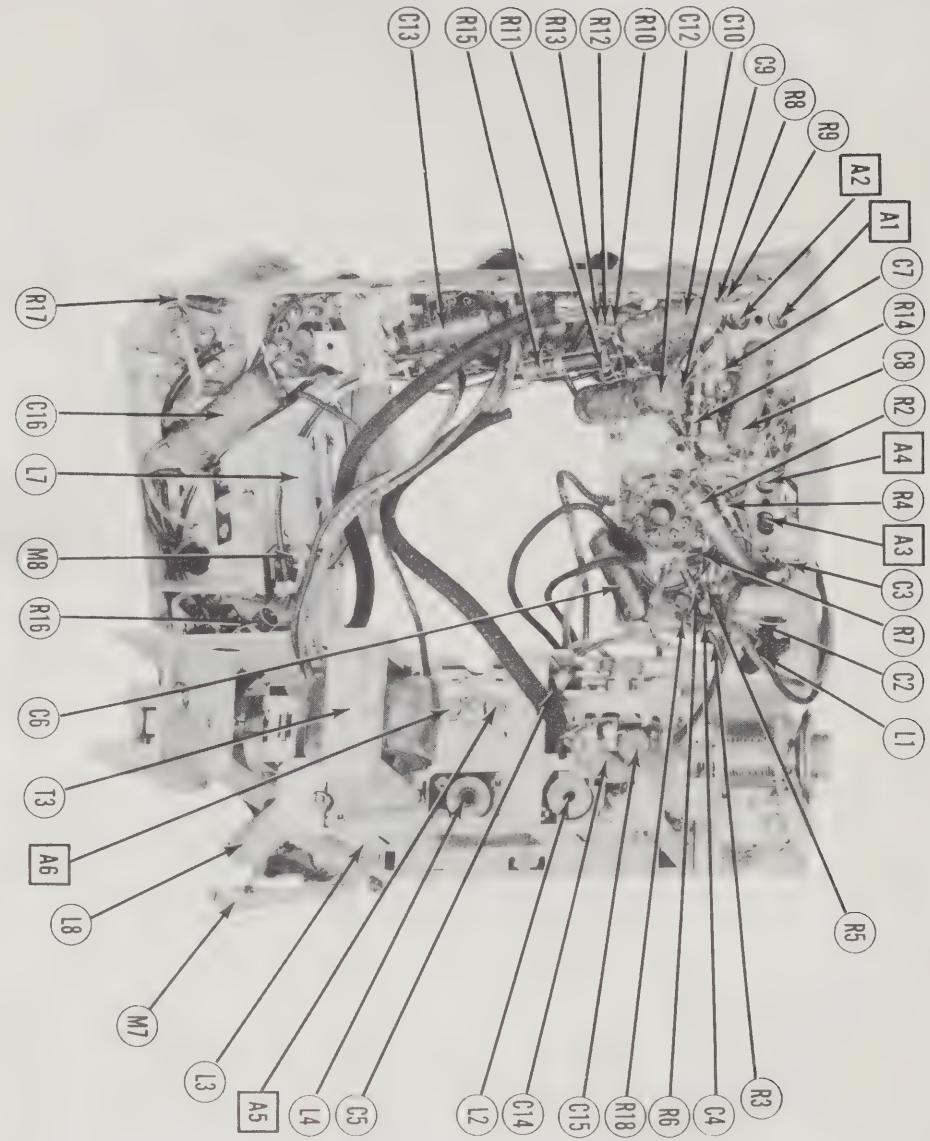
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA CADILLAC PART No.		NOTES
M2	Bayonet	6-8V	0.2A	White			Type #51
M3	Bayonet	6-8V	.25A	Blue			Type #44
M4	Bayonet	6-8V	0.25A	Blue			Type #44

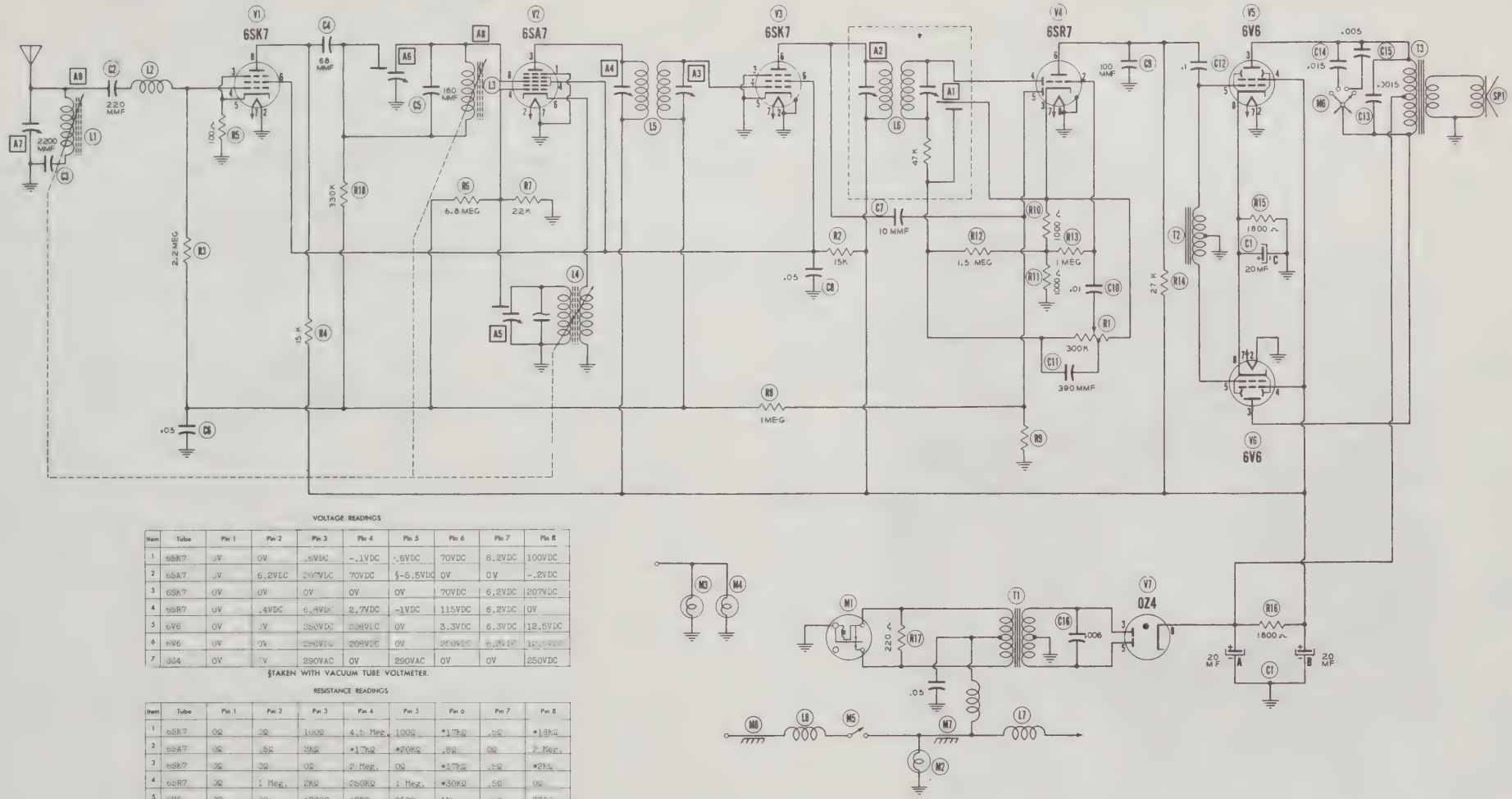
MISCELLANEOUS

ITEM No.	PART NAME	CADILLAC PART No.	NOTES
MM5	Switch	7256915	On-Off
MM6	Switch	1218056	Tone
M7	Spark Plate	7241259	
M8	Spark Plate	1217848	
A5	Dual Trimmer	7242454	Osc. Adjustment
A6			RF Adjustment
A7	Trimmer	7256949	Antenna Adjustment
	Glass Dial	7256793	
	Dial Pointer	7256787	

CHASSIS—BOTTOM VIEW



CADILLAC MODEL 7256609



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V	0V	.6VDC	-.1VDC	.6VDC	70VDC	6.2VDC	100VDC
2	6SA7	0V	6.2VDC	207VDC	70VDC	§-6.5VDC	0V	0V	-.2VDC
3	6SK7	0V	0V	0V	0V	0V	70VDC	6.2VDC	207VDC
4	6SR7	0V	.4VDC	6.4VDC	2.7VDC	-1VDC	115VDC	6.2VDC	0V
5	6V6	0V	0V	250VDC	208VDC	0V	3.3VDC	6.3VDC	12.5VDC
6	6V6	0V	0V	250VDC	209VDC	0V	250VDC	6.3VDC	12.5VDC
7	0Z4	0V	0V	290VAC	0V	290VAC	0V	0V	250VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	100Ω	4.5 Meg.	100Ω	*17kΩ	.5Ω	*13kΩ
2	6SA7	0Ω	.5Ω	2kΩ	*17kΩ	*20kΩ	.8Ω	0Ω	2 Meg.
3	6SK7	0Ω	0Ω	0Ω	2 Meg.	0Ω	*17kΩ	.5Ω	*2kΩ
4	6SR7	0Ω	1 Meg.	2kΩ	250kΩ	1 Meg.	*30kΩ	.5Ω	0Ω
5	6V6	0Ω	0Ω	*200Ω	*2kΩ	650Ω	1kΩ	.5Ω	330Ω
6	6V6	0Ω	0Ω	*1kΩ	*2kΩ	1kΩ	700kΩ	.5Ω	330Ω
7	0Z4	0Ω	Inf.	280Ω	Inf.	300Ω	Inf.	Inf.	60kΩ

* Measured from pin 8 of 0Z4.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltages measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume controlat maximum, no signal applied for voltage measurements.

CLARION
MODEL 14601

CLARION MODEL 14601

TRADE NAME Clarion, Model 14601
MANUFACTURER Warwick Mfg. Corp., 4640 W. Harrison St., Chicago 44, Illinois
TYPE SET AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES(FIVE) Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.

POWER SUPPLY 110-120 Volts AC-DC RATING .27 Amp., @ 117 Volts AC
TUNING RANGE—BROADCAST 540-1630KC

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning Cap. fully open	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used reduce dummy antenna to .001 MFD to reduce hum modulation.
2.	250MMF	"	1630KC	"	"	A5	Adjust for maximum output
3.		Loop	1400KC	Tune for maximum signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output.

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PARTS LIST AND DESCRIPTIONS

CLARION MODEL 14601

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CLARION PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7GT	12SA7GT	8R	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET-AVC-AF Amp.	12SQ7GT	12SQ7GT	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CLARION PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	
C1A	30	150	B18-283	PRSA150/30+	EDL3315		DSB-2X30-	TA-330	Red Filter
C1B	30	150		30			150		Yellow Filter
C2	.05	400	A16-158	P488-05	GT4S5		ST-4-05	72P1	Line Isolation
C3	50	500	A15-175	1468-00005	5W5T5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
C4	.02	400	A16-150	P488-02	GT4S2		ST-4-02	TM-12	Tuning Cap Isolation
C5	.05	200	A16-152	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C6	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	Diode Filter
C7	.005	600	A16-153	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C8	250	500	A15-176	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
C9	.005	600	A16-153	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C10	.002	600	A16-155	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Output Plate Bypass
C11	.05	400	A16-158	P488-05	GT4S5		ST-4-05	TM-15	Line Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	CLARION PART No.	IRC PART No.	CLAROSTAT PART No.	
R1	1 Meg.	½	A24-174			Volume control and switch.

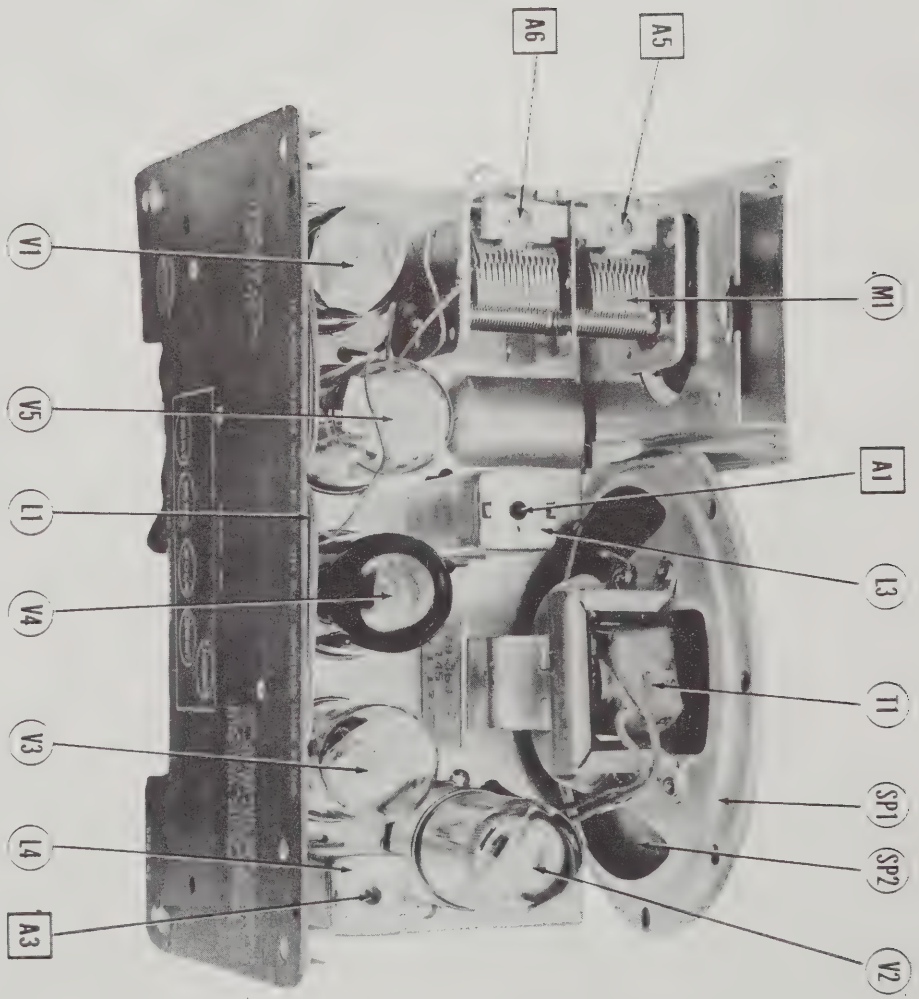
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	CLARION PART No.	IRC PART No.		
R2	22KΩ	½	A60-659	BTS-22K	Red-Red-Or.	Osc. Grid
R3	2.2 Meg.	½	A60-684	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
R4	47KΩ	½	A60-685	BTS-47K	Yl.-Vi.-Or.	Diode Filter
R5	10 Meg.	½	A60-663	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
R6	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	AF Plate
R7	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	Output Grid
R8	150Ω	1	A60-686	BW-½-150	Br.-Grn.-Br.	Output Cathode
R9	10KΩ	1	A60-698	BTA-10K	Br.-Blk.-Or.	Voltage Divider-Bleeder
R10	1000Ω	1	A60-732	BTS-1000	Br.-Blk.-Red	Filter
R11	27Ω	½	A60-690		Red-Yl.-Blk.	Rectifier Ballast
R12	470KΩ	½	A60-662	BTS-470K	Yl.-Vi.-Yl.	Line Isolation

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARION PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2100Ω	3.6Ω	146Ω	.6Ω	B79-378	A-3876	RO-2	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

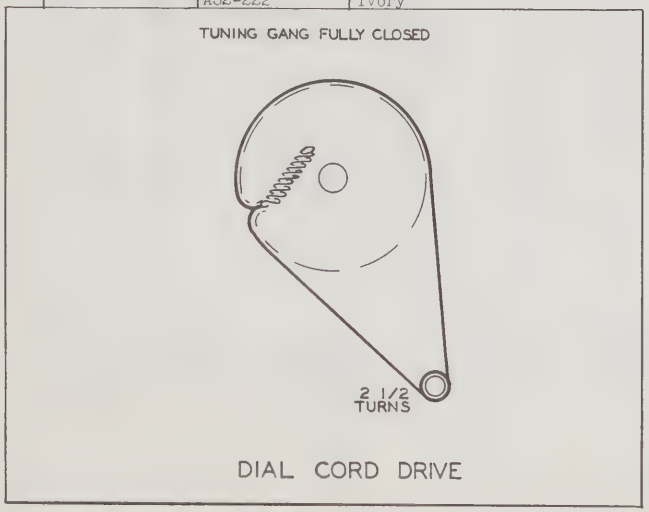
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CLARION PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105*		
SP1	PM	3.6Ω	B78-378	Model P5-X	5A07 *	* Remount Output transformer. Drill & tap magnet frame. Use original bracket or fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

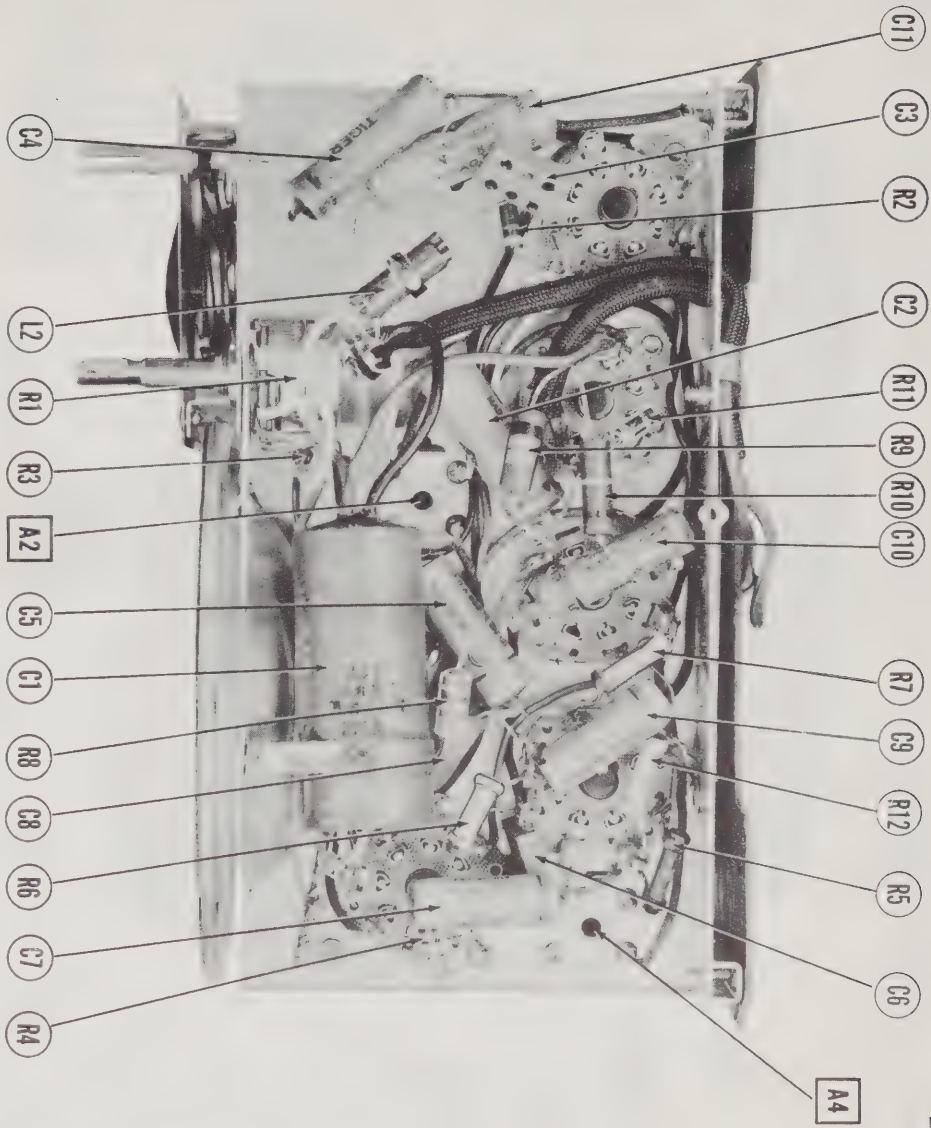
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CLARION PART No.	MEISSNER PART No.
L1	Loop Ant.	1Ω		S84-266	
L2	Osc. Coil	5Ω		B10-502	
L3	Input IF	20Ω	20Ω	A10-479	16-6678
L4	Output IF	20Ω	20Ω	A10-479	16-6678

MISCELLANEOUS

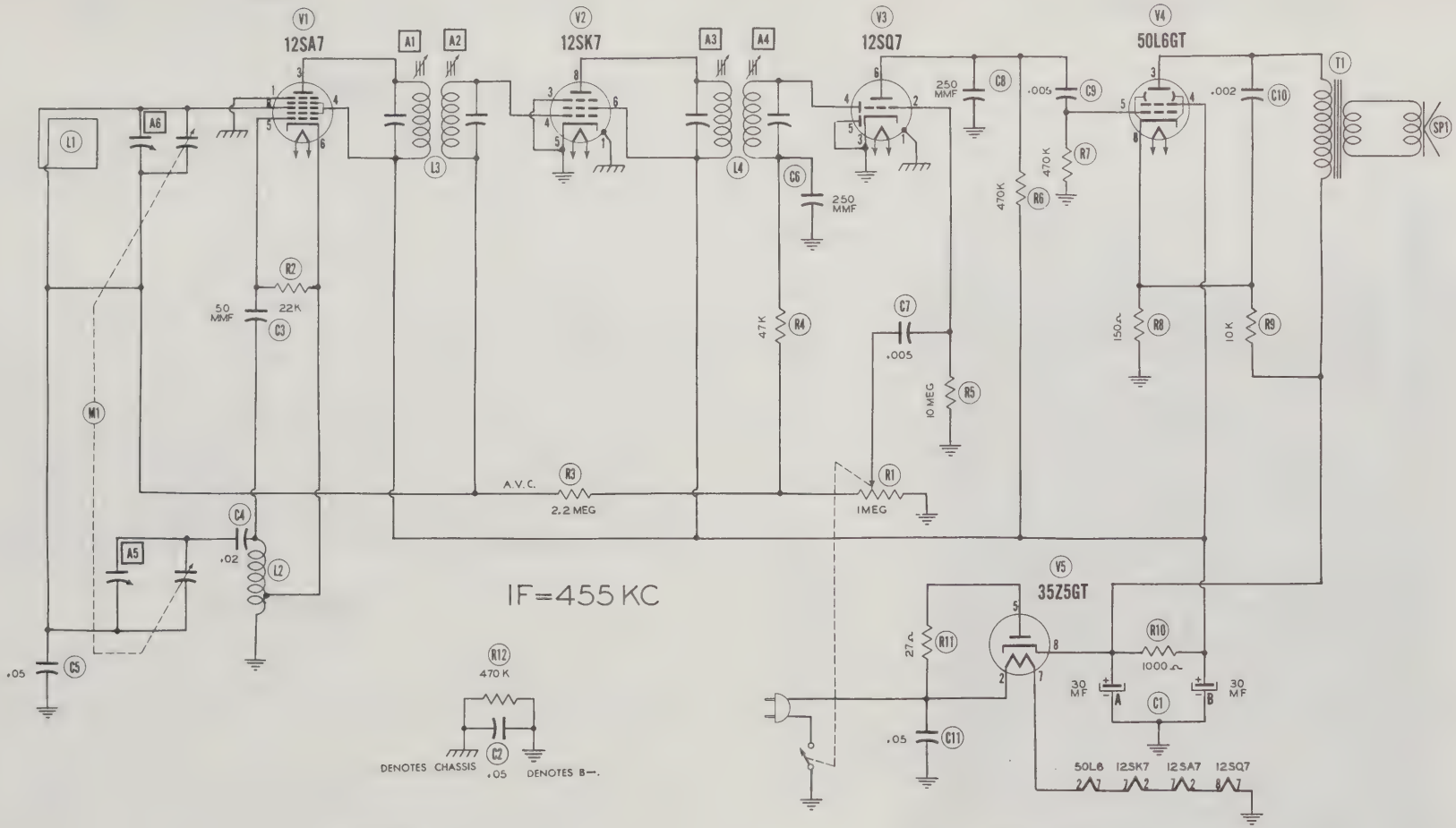
ITEM No.	PART NAME	CLARION PART No.	NOTES
M1	2 Gang Var. Cap	B19-194	(29-474 MMF, 31-206MMF)
	Cabinet	A42-451	Brown
	"	D42-424	Ivory
	Dial Scale	B67-510	
	Dial Pointer	A58-69	
	Knob	A52-243	Black
	"	A52-222	Ivory



CHASSIS—BOTTOM VIEW



CLARION MODEL 14601



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V	12VAC	92VDC	95VDC	§-9.6VDC	0V	24VAC	-.2VDC
V 2	12SK7GT	0V	24VAC	0V	-.2VDC	0V	95VDC	35VAC	93VDC
V 3	12SQ7GT	0V	-.9VDC	0V	-.7VDC	0V	40VDC	0V	12VAC
V 4	50L6GT	0V	80VAC	115VDC	95VDC	0V	0V	35VAC	6.6VDC
V 5	35Z5GT	0V	117VAC	0V	117VAC	115VAC	0V	80VAC	120VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	650KΩ	12Ω	*1000Ω	*1000Ω	22KΩ	.5Ω	26Ω	3.2 Meg.
V 2	12SK7GT	650KΩ	26Ω	0Ω	3.2 Meg.	0Ω	*1000Ω	38Ω	*1000Ω
V 3	12SQ7GT	650KΩ	10 Meg.	0Ω	1.4 Meg.	0Ω	*700KΩ	0Ω	12Ω
V 4	50L6GT	Inf.	87Ω	*140Ω	*1000Ω	*700KΩ	Inf.	38Ω	150Ω
V 5	35Z5GT	Inf.	120Ω	Inf.	120Ω	150Ω	Inf.	87Ω	10KΩ

* Measured from pin 8 of V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

CROSLEY
MODELS 9-103, 9-104W

CROSLEY MODEL 9-103

TRADE NAME	Crosley, Models 9-103, 9-104W
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES(SIX)	Types 6BJ6 RF Amp., 12BE6 Converter, 6BJ6 IF Amp., 12AV6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMFD	High side to ext. Ant. clip. Low side to B-.	455KC	Tuning Cap fully open	Across Voice Coil	A1, A2 A3, A4	Adjust A5 completely counter-clockwise. Adjust A1 thru A4 for maximum output.
2.	200MMFD	"	"	"	"	A5	Adjust for minimum output.
3.	200MMFD	"	1620KC	"	"	A6	" " maximum "
4.	200MMFD	"	1400KC	Tune for maximum output.	"	A7	" " " "

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control type control knobs.
2. Remove four machine screws holding chassis to cabinet.
3. Loosen screw holding loop antenna mounting bracket and slide chassis toward back of cabinet.
4. Lift chassis out bottom of cabinet.
5. Remove two 1/4" hex head metal screws holding bottom cover plate to chassis. Remove cover plate.

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PARTS LIST AND DESCRIPTIONS

CROSLEY MODEL 9-103

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CROSLEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amp.	6BJ6	6BJ6	7CM	
V4	DET-AVC-AF	12AV6	12AV6		
V5	Power Output	50C5	50C5		
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	B-143680	PRSA150/30-50	EDL5315		DSB5030-150	TA530	Filter Red
C1B	30	150							Filter Blue
C2	.075	200	39001-19	P288-075	GT2P1		ST-2-1	72P2	Line Isolation
C3	.1	200	39001-19	P288-1	GT2P1		ST-2-1	TM-1	AVC Filter
C4A	30		B-144675-4		5R5W3	N750K30	MOS.5-43	MS-43	Fixed Trimmer
C4B	220			1468-0002	5W5T2	GP2K-200	MO.5-32	1FM-32	RF Coupling
C4C	50			1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap
C5	18		C-137727-66		5R5Q2	NP0K-20	MO.5-42	MS-42	Fixed Trimmer
C6A	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Filter
C6B	100		Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
C7	220	500		1468-0002	5W5T2	GP2K-250	MO.5-32	1FM-32	Diode Filter Note 1
C8A	2000		B-144675-5	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Audio Coupling
C8B	2000			P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Tone Compensation
C8C	100			1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate bypass
C8D	2000			P688-002	GT6D2	GP2M-002	ST-6-002	TM-32	Tone Compensation
C9	.02	600	39001-80	P688-02	GT6S2		ST-6-02	TM-12	Audio Coupling
C10	.03	200	39001-17	P488-03	GT4S3		ST-6-03	TM-13	Output Plate Bypass
C11	.05	200	39001-17	P288-05	GT2S5		ST-4-05	TM-15	Line Filter

Note. Items C6A, C6B and R6 are combined into one unit obtainable under MFGRS Pt #B-142951-2.
Note 1. Used in place of items C6A, and C6B in some models.

CONTROLS

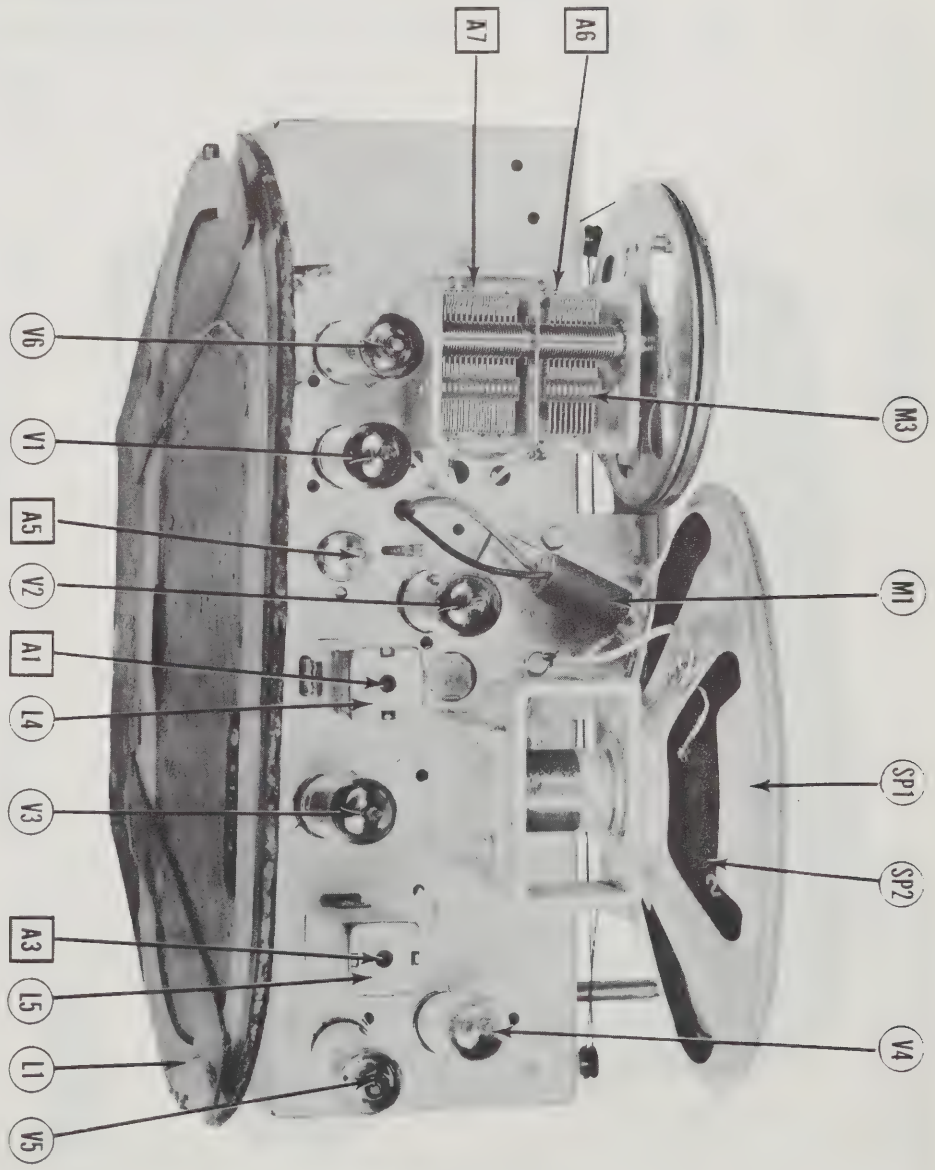
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	39368-14	D13-137	AT-109	Volume control
B	Shaft		Not. Req.	E	KSS-3	Attach to R1A Per Instructions.
C	Switch		39369-1	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	4700Ω	½	39373-47	BTS-4700	Yl.-Vl.-Red	RF Plate Load
R3	220KΩ	½	39373-80	BTS-220K	Red-Red-Yl.	Converter Grid
R4	22KΩ	½	39373-60	BTS-22K	Red-Red-Or.	Osc. "
R5	2.2 Meg.	½	39373-97	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
R6	47KΩ	½	See Note	BTS-47K		Diode RF Filter
R7	10 Meg.	½	39373-107	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
R8	470KΩ	½	39373-87	BTS-470K	Yl.-Vl.-Yl.	" Plate
R9	470KΩ	½	39373-87	BTS-470K	Yl.-Vl.-Yl.	Output Grid
R10	150Ω	½	39373-14	BW-½-150	Br.-Grn.-Br.	" Cathode See Note 2
R11	22Ω	½	39373-119		Red-Red-Blk.	Surge Limiter " " 3
R12	2200Ω	2		BT-2-2200	Red-Red-Red	Filter " " 4
R13	100KΩ	½	39373-74	BTS-100K	Br.-Blk.-Yl.	Tone Compensation

Note Items C6A, C6B and R6 are combined into one unit and are obtainable under MFGRS Pt#B-142951-2
Note 2. Some models use 100Ω resistor in this application. IRC replacement BW-½-100
Note 3. " " " 47Ω " " " " "
Note 4. " " " 1200Ω " " " " " Crosley Pt# 39373-144. IRC replacement BT-2-1200.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CROSLEY PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2100Ω	3.7Ω	230Ω	.66Ω	B-137723	A-3876	RO-2	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CROSLEY PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.6Ω	136420		46A1*	* Drill and tap magnet frame. Trim Flange.
	CONE DIA.	V. C. DIA.				
SP2	4" x 6"	9/16"				

R F COILS

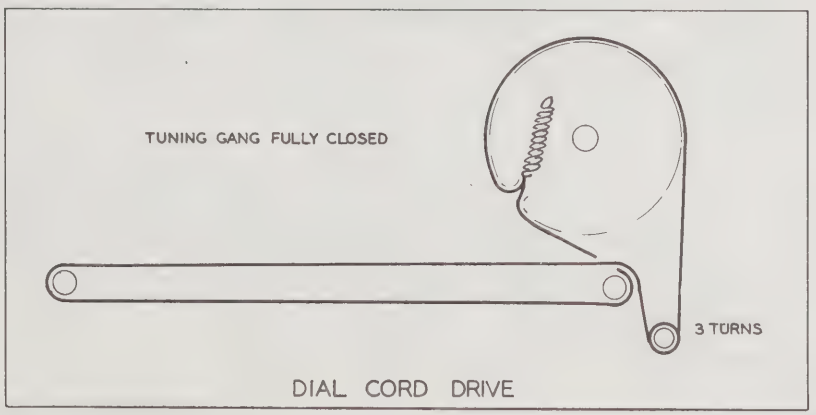
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	CROSLEY PART No.	MEISSNER PART No.
L1	Loop Ant.	0Ω	3Ω	AC-143698	
L2	IF trap coil	32Ω		AW-143474	
L3	Osc. coil	.5Ω	7Ω	AW-144325	14-1060
L4	Input IF	9.5Ω	10Ω	AB-143378	16-6678
L5	Output IF	15.5Ω	15Ω	AB-143679	16-6678

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					CROSLEY PART No.		
M1	Bayonet	6-8V	0.15A	Brown	W-48858		Type #47

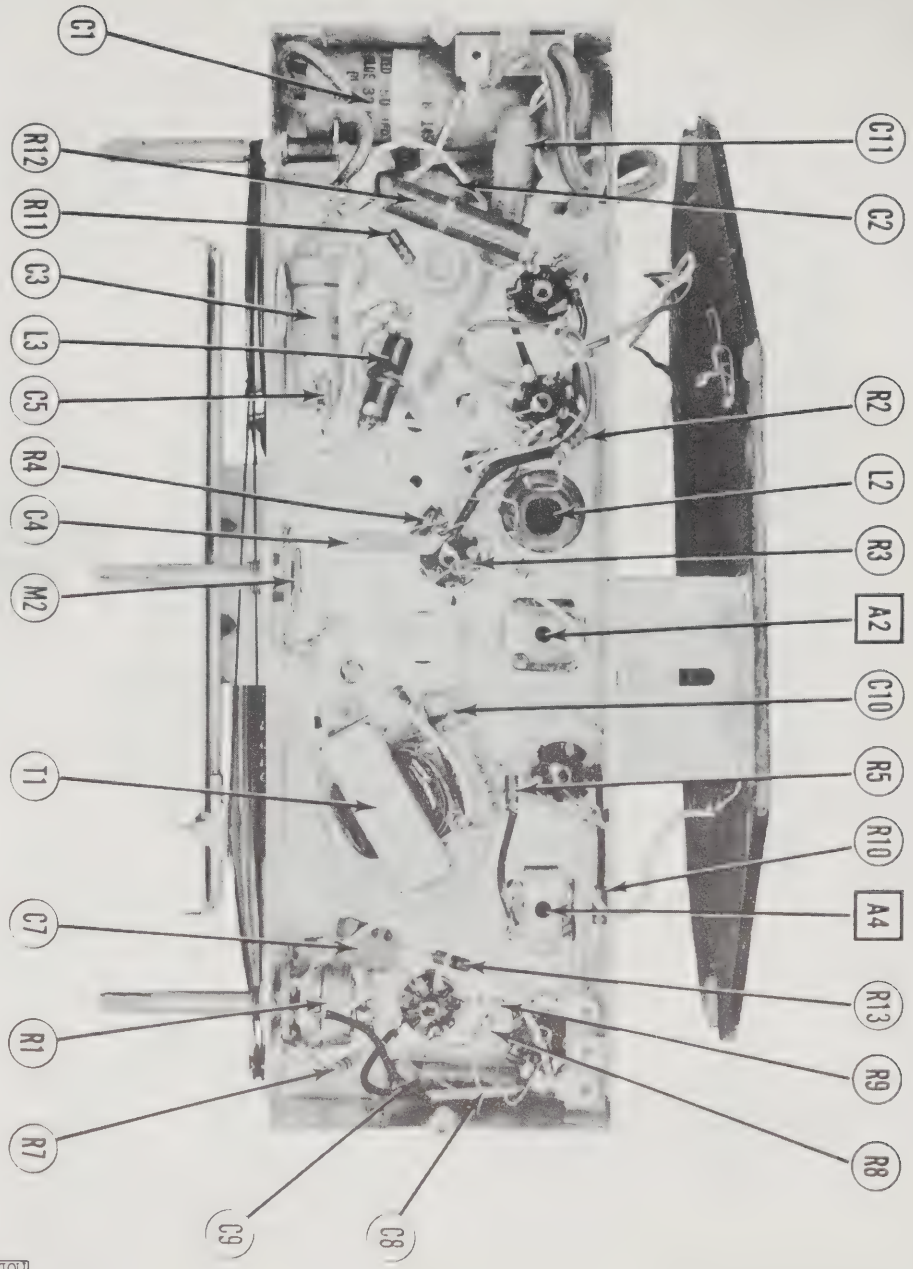
MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M2	Switch	B-143494	Tone
M3	2 Gang Var. Cap.	AC-137073-24	(24-465MMF, 16-192MMF)
	Cabinet	R-143113-1	Model 9-103
	"	R-143113-2	" 9-104W
	Dial	C-143884	
	Dial Pointer	143289	
	Knob	B-138576-8	Model 9-103
	"	B-138576-7	" 9-104W

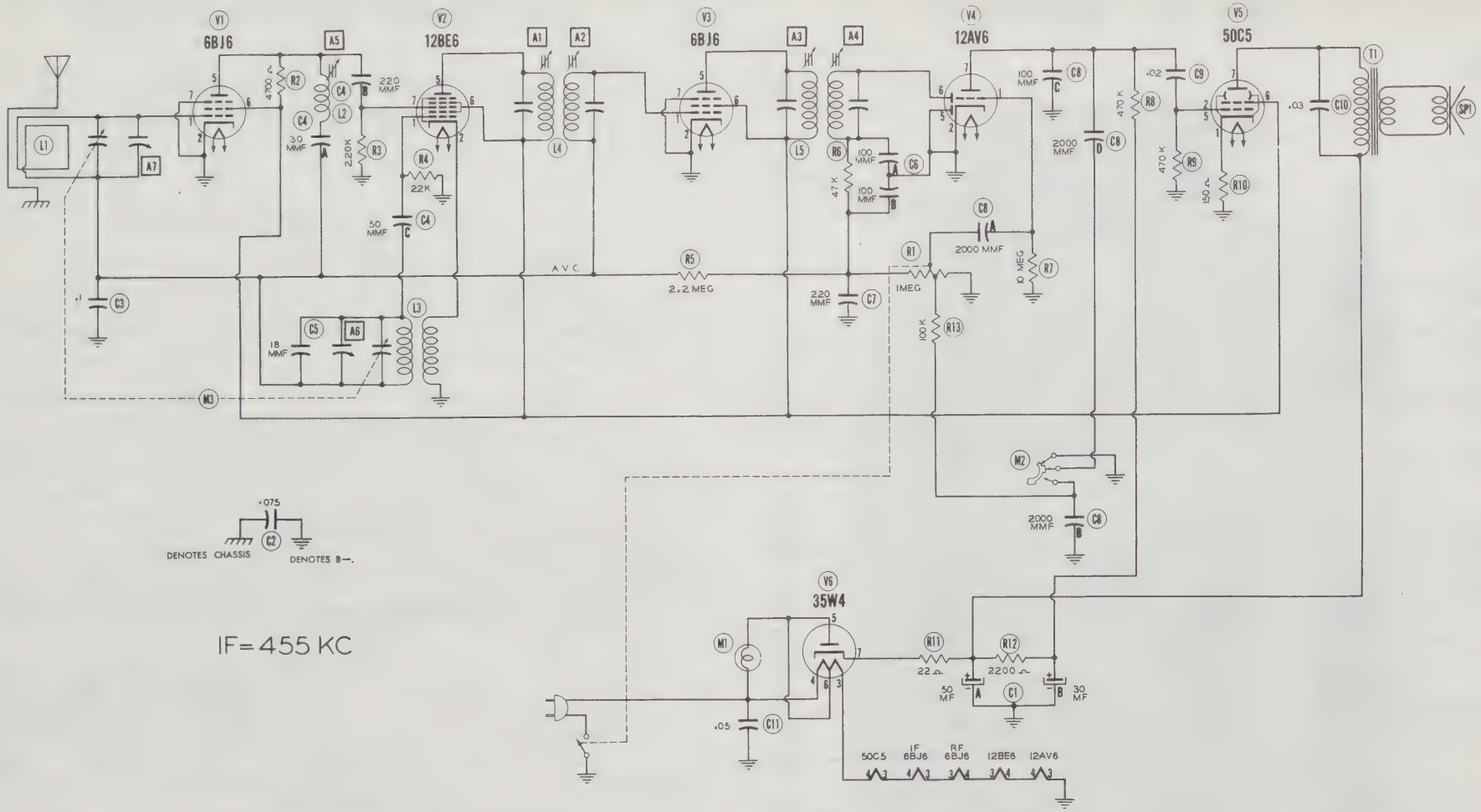


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



CROSLEY MODEL 9-103



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	-.8VDC	0V	31VAC	25VAC	55VDC	70VDC	0V
V 2	12BE6	5-6VDC	0V	25VAC	12VAC	70VDC	70VDC	-.4VDC
V 3	6BJ6	-.8VDC	0V	31VAC	37VAC	70VDC	70VDC	0V
V 4	12AV6	-.6VDC	0V	0V	12VAC	0V	-.4VDC	43VDC
V 5	50C5	4VDC	0V	37VAC	87VAC	0V	70VDC	112VDC
V 6	35W4	0V	117VDC	87VAC	117VAC	113VAC	113VAC	116VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BJ6	3.2 Meg.	0Ω	30Ω	24Ω	6KΩ*	1200Ω*	0Ω
V 2	12BE6	22KΩ	.7Ω	24Ω	12Ω	1200Ω*	1200Ω*	3.5 Meg.
V 3	6BJ6	3.2 Meg.	0Ω	30Ω	36Ω	1200Ω*	1200Ω*	0Ω
V 4	12AV6	10 Meg.	0Ω	0Ω	12Ω	0Ω	1 Meg.	470KΩ*
V 5	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	*1200Ω	*200Ω
V 6	35W4	0Ω	22Ω *	85Ω	110Ω	108Ω	108Ω	60KΩ

* Measured from pin 7 of tube V6 (35W4)

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498-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FARNSWORTH
MODELS GK-111, 112, 114, 115

FARNSWORTH MODEL GK-111

TRADE NAME	Farnsworth, Model GK-111, GK-112, GK-114, GK-115
MANUFACTURER	Farnsworth Television & Radio Corp., Fort Wayne, Indiana
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(ELEVEN)	Types 6AG5 FM RF Amp., 6SB7Y FM Converter, 6SG7 FM 1st IF-AM RF Amp., 6SA7 AM Converter, 6SF7 FM 2nd IF-AM IF-DET-AVC, 6H6 FM DET-AVC, 6SJ7 Phono Pre-Amp., 6SL7GT AF-Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .66 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC — FREQ. MOD. 87.5-108.5MC

PUSHBUTTON ADJUSTMENT

The freq. range of pushbuttons, reading from left to right are as follows: 550-1250KC, 600-1350KC, 650-1450KC, 650-1450KC, and 750-1600KC.

1. Remove button escutcheon exposing adjustment screws.
2. Turn receiver on and allow it to warm up for 30 minutes.
3. Make up a list of desired stations ranging from low to high frequency making sure that each will fall within the range of the button to be used.
4. Depress "Dial" button and manually tune in the first station desired to be set up.
5. Depress first button on left and adjust B1 to tune in desired station.
6. Adjust B2 for maximum volume.
7. To set up the remaining buttons follow the same procedure outlined above.
8. Once all the buttons have been set up recheck each one to correct any drift due to interaction between adjacent coils.

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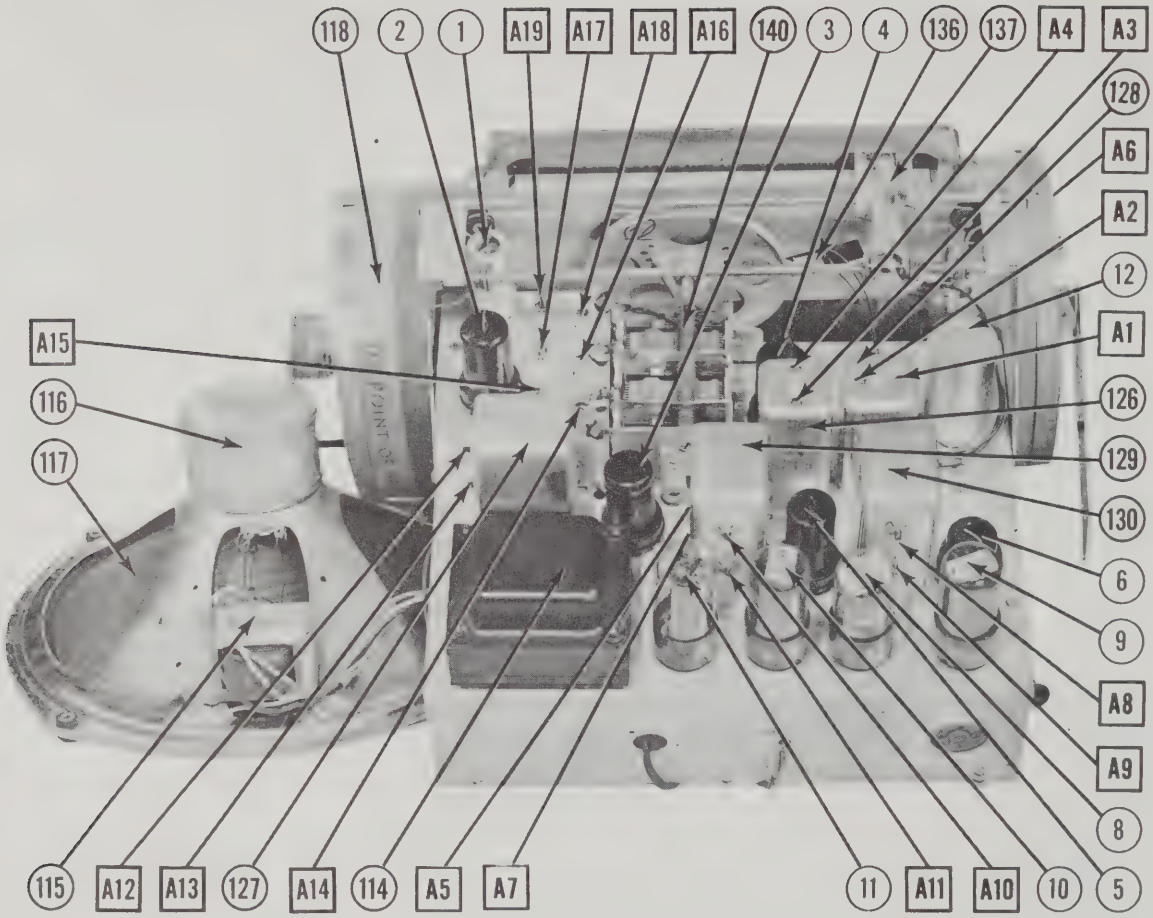
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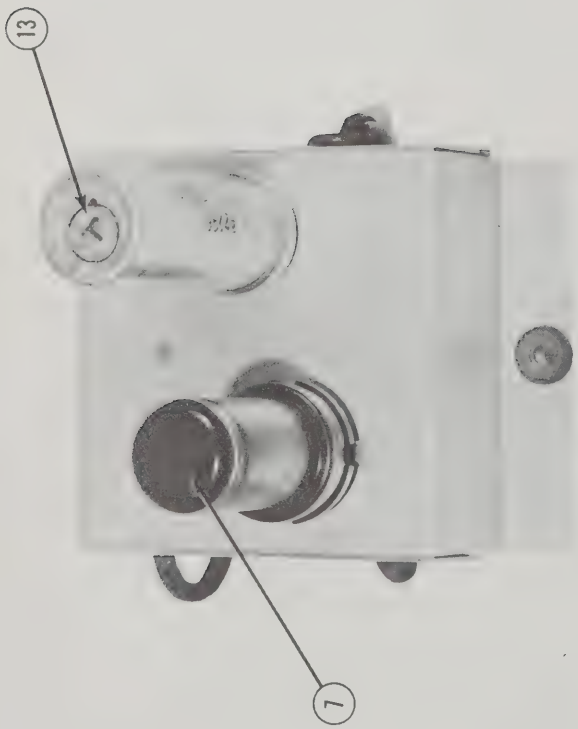
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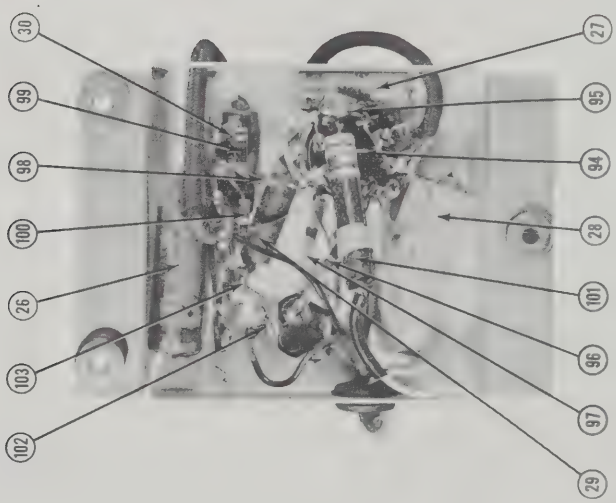
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	FM RF Amp.	6AG5	6AG5	7BD	
2.	FM Converter	6SB7Y	6SB7Y	8R	
3.	FM 1st IF Amp. AM RF Amp.	6SG7	6SG7	8BK	
4.	AM Converter	6SA7	6SA7	8R	
5.	FM 2nd IF Amp. AM IF-DET-AVC	6SF7	6SF7	7AZ	
6.	FM DET-AVC	6H6	6H6	7Q	
7.	Phono Pre-Amp.	6SJ7	6SJ7	8N	
8.	AF-Phase Invert.	6SL7GT	6SL7GT	8BD	
9.	Power Output	6V6GT	6V6GT	7AC	
10.	Power Output	6V6GT	6V6GT	7AC	
11.	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FARNSWORTH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12A	30	450	25214	AF444J4A*	UP222		DY-403	EL-424	◓ Filter
B	20	450		PRS450/10	45C*				◪ Filter
C	20	450			BR1045				▲ Filter
D	20	25							Cathode Bypass
13A	20	450	25431	AF22J4A*	UP2045C		DY20-400/	EL-350	Decoupling
B	25	25					20-25	‡	Cathode Bypass
14	4	50	25316	PRS150/4	BR415		M-4-450	TA-55	Stabalizing Cap
15	4	50	25316	PRS150/4	BR415		M-4-450	TA-55	" "
16	.005	600	25183	684-005	GT6D5		ST-6-005	TC-25	Line Filter
17	.003	600	25184	684-003	GT6D3	GP2M-003	ST-6-003	TC-23	Output Plate Bypass
18	.003	600	25184	684-003	GT6D3	GP2M-003	ST-6-003	TC-23	" " "
19	.02	600	25195	684-02	GT6S2		ST-6-02	TC-12	Audio Coupling
20	.02	600	25195	684-02	GT6S2		ST-6-02	TC-12	" "
21	.01	400	25194	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
22	.01	400	25194	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
23	.01	400	25194	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
24	.002	600	25185	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	Tone Compensation
25	.003	600	25184	684-003	GT6D3	GP2M-003	ST-6-003	TC-23	" " Note 1
26	.05	600	25196	684-05	GT6S5		ST-6-05	TC-15	Audio Coupling
27	.005	200		484-005	GT6D5	GP2M-005	ST-6-005	TC-25	Tone Compensation
28	.25	600	25433	684-25	GT6P25		ST-6-25	TC-2	Pre-Amp Screen Bypass
29	.001	200	25432	484-001	GT6D1	GP2L-001	ST-6-001	TC-21	Tone Compensation
30	.003	600	25184	684-003	GT6D3	GP2M-003	ST-6-003	TC-23	" "
31	.1	200	25215	484-1	GT2P1		ST-2-1	TC-1	AVC Filter
32	.01	600	25194	684-01	GT6S1	GP2-335-01	ST-6-01	TC-11	2nd IF Decoupling
33	.05	200	25196	484-05	GT2S5		ST-4-05	TC-15	AVC Filter
34	.005	600	25183	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Osc. Feedback
35	.05	200	25196	484-05	GT2S5		ST-4-05	TC-15	AVC Filter
36	100	500	25188	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Tone Compensation Note 2
37	100	500	25188	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode Load Cap Note 3
38	100	500	25188	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" " " " " 3
39	4000	500	25271	1467-004	1D5D4		MW.5-24	1FM-24	De-emphasis
40	100	500	25188	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Diode RF Filter
41	100	500	25188	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" " " "
42	4	300	25327	1468-000005	5W5V5	N150K4	MO.5-55	MS-55	IF Coupling
43	4000	500	25271	1467-004	1D5D4	GP2M-005	MW.4-20	1FM-24	2nd IF Screen Bypass
44	1500	300	25273	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	Decoupling
45	30	300	25329	1468-000025	5W5Q3	GP1K-25	MO.5-43	MS-43	1st IF Plate Decoupling
46	4000	500	25271	1467-004	1D5D4	GP2M-005	MW.5-24	1FM-24	1st IF Screen Bypass
47	1500	300	25273	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	Decoupling
48	1500	300	25273	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	AVC Filter
49	1500	300	25273	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM Conv. Plate Decoupling
50	1500	300	25273	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	FM Conv. Screen Bypass
51	30	300	25329	1468-000025	5W5Q3	GP1K-25	MO.5-43	MS-43	FM Osc. Grid Cap
52	30	300	25332	1468-000025	5W5Q3	GP1K-25	MO.5-43	MS-43	FM RF Coupling
53	1500	300	25273	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM RF Plate Decoupling
54	1500	300	25273	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM RF Screen Bypass
55	1500	300	25273	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	AVC Filter
56	60	300	25333	1468-000075	5W5Q7	GP1K-75	MOS.5-47	MS-47	FM RF Coupling
57	50	500		1468-000075	5W5Q5	GP1K-50	MO.5-45	1FM-45	AM Osc. Grid Cap Note 4

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
108	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Output Grid
109	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
110	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
111	1000Ω	2	77252	BT-2-1000	Br.-Blk.-Red Filter
112	2700Ω	5	77243	AB-2500	Red-Vi.-Red "
113	270Ω	2	77189	BW-2-270	Red-Vi.-Br. Output Cathode

Note. Not used in earlier production.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
114	117VAC @ .66A	560VCT .076ADC	5.2VAC @ 2.0A	6.6VAC @ 3.6A	94204	P-6012§	PH-90§	P-2952§

§ Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
115	10KΩ CT	3.3Ω	770Ω CT	.6Ω	94239	A-3870	RO-110#	A-3027	# Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
116	FIELD PM	V. C. IMP. 3.3Ω	81169	ST-102 † MOD P12-S	12A4 †	† Replace output XFMR. to match 6-8Ω voice coil.
117	CONE DIA. 11 1/2"	V. C. DIA. 1 IN.				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: FARNSWORTH PART No.	REPLACEMENT DATA: MEISSNER PART No.
118	Loop Ant.	100Ω	1Ω	38696	
119	FM Dipole		0Ω	11325	
120	Loop Load		1.5Ω	38845	
121	FM Ant.		0Ω	38690	
122	FM RF		0Ω	38691	
123	Wave Trap		33Ω	38484	
124	BC Osc.	.5Ω	3.5Ω	38694	14-1060
125	FM Osc.		0Ω	38692	
126	1st IF-AM	10Ω	9Ω	38681	16-6658
127	1st IF-FM	.5Ω	.5Ω	38683	
128	2nd IF-AM	9Ω	9Ω	38682	16-6660
129	2nd IF-FM	.5Ω	.5Ω	38684	
130	FM Ratio Det.	2Ω	0Ω	38685	
131	FM RF Plate Choke		.1Ω	38661	
132	Fil. Choke		.1Ω	38661	
133	Fil. Choke		.1Ω	38661	
134	Fil. Choke		.1Ω	38661	
135	Fil. Choke		.1Ω	38661	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FARNSWORTH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
58	47	500		1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	AM Osc. Grid Cap. Note 4
59	1350	500	25213						Fixed Trimmer Silver
60	215	500	25212						" " "
61	50	300		1469-00005	5R5Q5	NPOM-50	MOS.5-45	MS-45	" " Note 5

† Parallel sections to obtain desired capacity.
Note 1. Used in early production.
Note 2. Used in later production.
Note 3. If either item 37 or 38 is replaced with a cap of different value replace the other with a cap of equal value.
Note 4. Some models use a single capacitor of 47MMF in place of items 57 and 58, MFGRS Pt. No. 25193.
Note 5. Not used in all models.
† Omit one section.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FARNSWORTH PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
62	3 Meg.	½	78057			Volume control and SW. tapped @ 1.5 Meg.
63A	3 Meg.	½	78072	D13-140	AM-67-Z	Tone control
B	Shaft		Not. Req.	E	KSS-3	Attach to 63A Per Instructions.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FARNSWORTH PART No.	IRC PART No.	IDENTIFICATION CODES
64	100KΩ	½	77214	BTS-10CK	Br.-Blk.-Yl. FM RF Grid
65	15KΩ	½	77265	BTS-15K	Br.-Grn.-Or. FM RF Screen
66	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM RF Plate Decoupling
67	10KΩ	½	77212	BTS-10K	Br.-Blk.-Or. FM RF Coil Shunt
68	22KΩ	½	77266	BTS-22K	Red-Red-Or. FM Osc. Grid
69	10KΩ	2	77013	BT-2-10K	Br.-Blk.-Or. FM Conv. Screen
70	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM Conv. Plate Decoupling
71	220KΩ	½	77216	BTS-220K	Red-Red-Yl. AM Conv. Grid
72	10KΩ	2	77013	BTS-10K	Br.-Blk.-Or. AM Conv. Screen
73	22KΩ	½	77266	BTS-22K	Red-Red-Or. AM Osc. Grid
74	4.7 Meg.	½	77272	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Net.
75	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. " "
76	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. " "
77	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. 1st IF Screen Decoupling
78	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red " " " "
79	4700Ω	½	77211	BTS-4700	Yl.-Vi.-Red AM RF Plate Load
80	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
81	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Net.
82	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. 2nd IF Screen
83	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
84	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Diode Filter
85	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
86	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk. Grn. AVC Net
87	22KΩ	½	77266	BTS-22K	Red-Red-Or. De-emphasis
88	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Tone Compensation
89	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. Rat'o Det. Diode Load
90	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. " " " "
91	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Net.
92	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Tone Compensation
93	1 Meg.	½	77218	BTS-1 Meg.	Br._Blk.-Grn. " " " See Note
94	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Pre-Amp Grid
95	1500Ω	½		BTS-1500	Br._Grn.-Red Pre..Amp Cathode
96	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Pre-Amp Screen
97	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Pre-Amp Plate Load
98	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Tone Compensation
99	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. " "
100	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. " "
101	4.7Ω	2		BW-2-4.7	Yl.-Vi.-Gold Series Filament
102	47KΩ	1	77213	BTS-47K	Yl. Vi.-Or. Pre-Amp Decoupling
103	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Tone Compensation
104	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue 1st AF Grid
105	470KΩ	½	77217	BRS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
106	10 Meg.	½	77274	BRS-10 Meg.	Br._Blk.-Blue Phase Inverter Grid
107	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl Phase Inverter Plate Load

DATE 4/4/9 496-1-1 SET # 99 FOLDER II

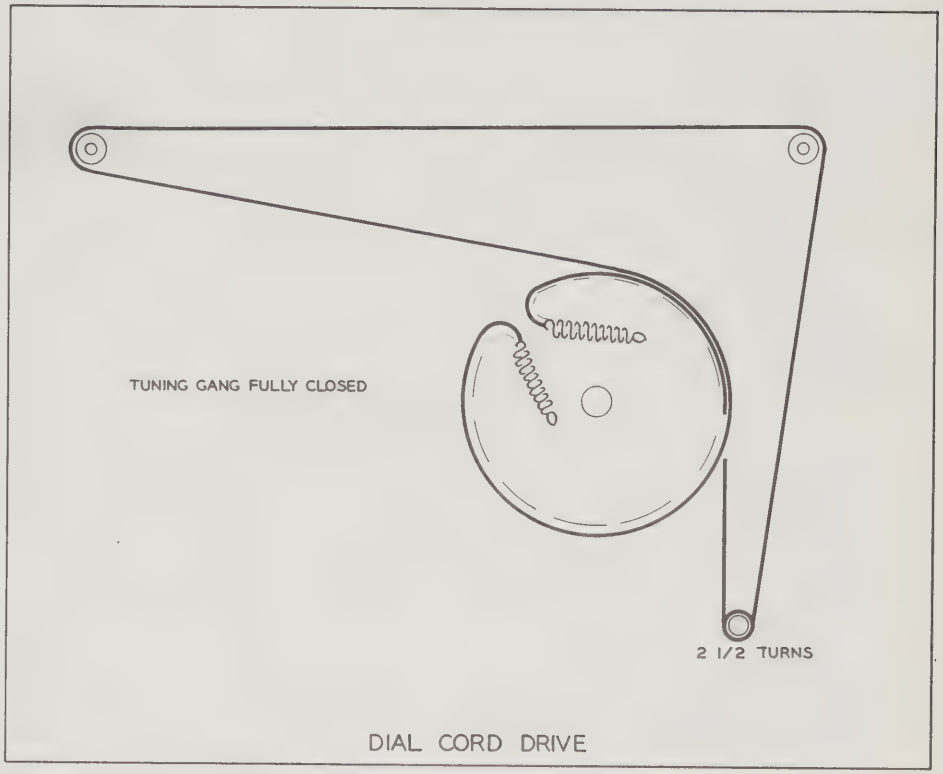
PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHTS

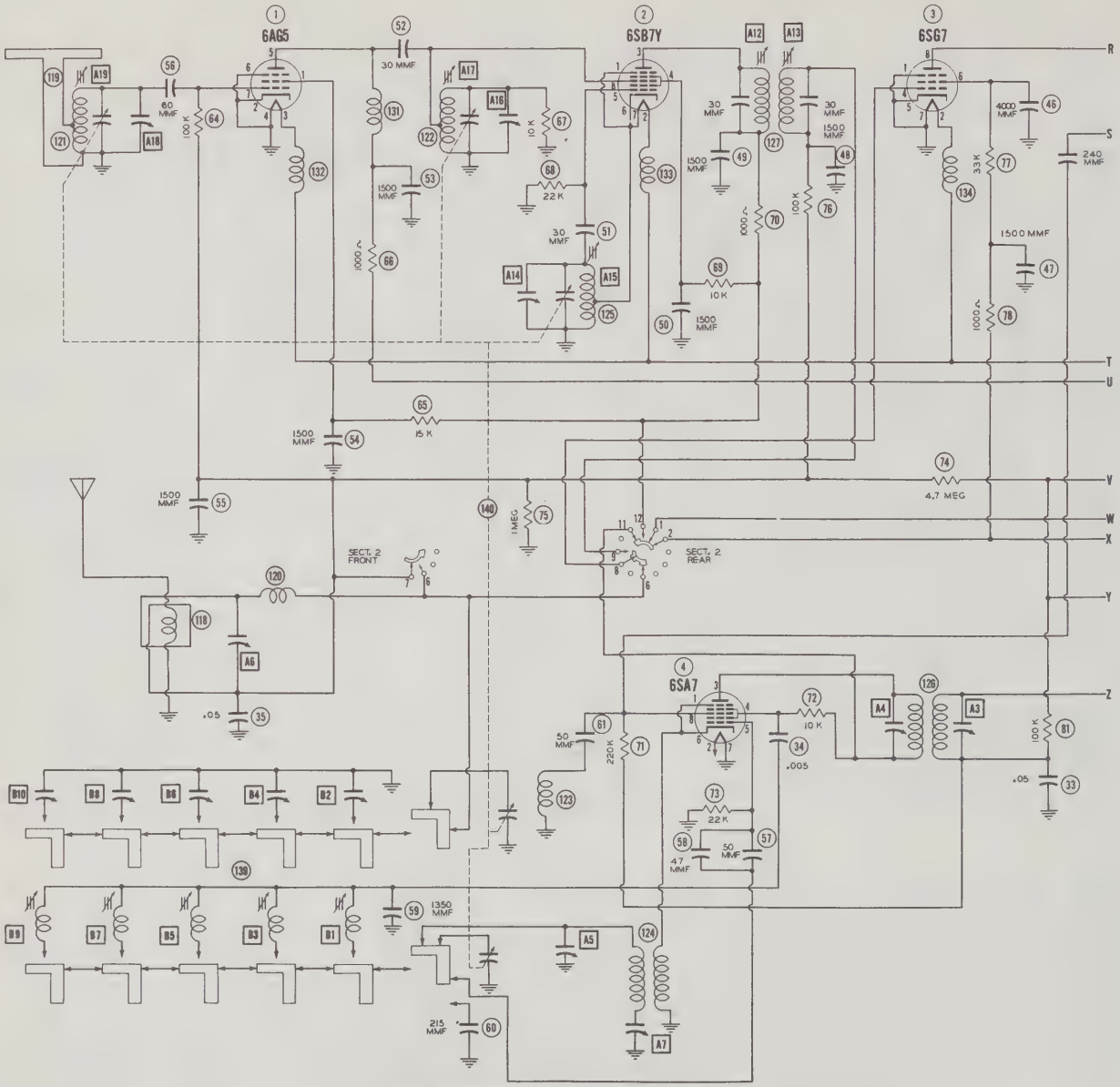
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA FARNSWORTH PART No.		NOTES
136	Bayonet	6-8V	0.25A	Blue	42185		Type #44
137	Bayonet	6-8V	0.25A	Blue	42185		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	FARNSWORTH PART No.	NOTES
138	Switch	90214	Band
139	Switch	90118	Push Button Assembly
140	Tuning Gang	26237	AM(13-465MMF, 13-465MMF)
A5	Dual Trimmer	26240	BC Osc. Adjustment
A7			BC Osc. Adjustment (Padder)
A6	Trimmer	26031	BC Ant. Adj.
A14	Trimmer	26231	FM Osc. Adj.
A16	Trimmer	26231	FM RF Adj.
A18	Trimmer	26231	FM Ant. Adj.
	Dial Scale	31338	
	Dial Pointer	07373	



DIAL CORD DRIVE



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	-.4VDC	0V	6.6VAC	0V	180VDC	135VDC	0V	
‡	2	6SB7Y	0V	6.6VAC	155VDC	75VDC	5-4.4VDC	0V	0V	0V
	3	6SQ7	0V	6.6VAC	0V	-.7VDC	0V	85VDC	0V	140VDC
	4	6SA7	0V	0V	180VDC	95VDC	5-4.3VDC	0V	6.6VAC	-.7VDC
	5	6SF7	0V	-.4VDC	0V	75VDC	-.5VDC	165VDC	0V	6.6VAC
‡	6	6H6	0V	0V	-.4VDC	0V	0V	0V	6.6VAC	0V
**	7	6SJ7	0V	1.2VAC	.8VDC	0V	.8VDC	17VDC	0V	40VDC
	8	6SL7GT	-.4VDC	55VDC	0V	-.4VDC	60VDC	0V	6.6VAC	0V
	9	6V6GT	0V	0V	290VDC	200VDC	0V	0V	6.6VAC	13VDC
	10	6V6-T	0V	0V	290VDC	200VDC	0V	0V	6.6VAC	13VDC
	11	5Y3GT	0V	300VAC	0V	280VAC	0V	280VAC	0V	300VDC

‡TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	1.1 Meg.	0Ω	.1Ω	0Ω	64KΩ	75KΩ	0Ω	
‡	2	6SB7Y	0Ω	.1Ω	64KΩ	70KΩ	22KΩ	0Ω	0Ω	0Ω
	3	6SQ7	0Ω	.1Ω	0Ω	900KΩ	0Ω	95KΩ	0Ω	70KΩ
	4	6SA7	0Ω	0Ω	64KΩ	74KΩ	22KΩ	.5Ω	.1Ω	1.4Meg.
	5	6SF7	0Ω	1.2 Meg.	0Ω	100KΩ	520KΩ	64KΩ	0Ω	.1Ω
‡	6	6H6	0Ω	0Ω	33KΩ	Inf.	Inf.	Inf.	.1Ω	33KΩ
**	7	6SJ7	0Ω	4.8Ω	1.5KΩ	47KΩ	1.5KΩ	2.3 Meg	0Ω	580KΩ
	8	6SL7GT	10 Meg.	530KΩ	0Ω	10 Meg.	53KΩ	0Ω	.1Ω	0Ω
	9	6V6GT	.1Ω	0Ω	63KΩ	43KΩ	440KΩ	22KΩ	.1Ω	270Ω
	10	6V6-T	0Ω	0Ω	60KΩ	63KΩ	440KΩ	Inf.	.1Ω	270Ω
	11	5Y3GT	Inf.	60KΩ	Inf.	8KΩ	Inf.	106Ω	Inf.	60KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

** VOLTAGE AND RESISTANCE READINGS TAKEN IN PHONO POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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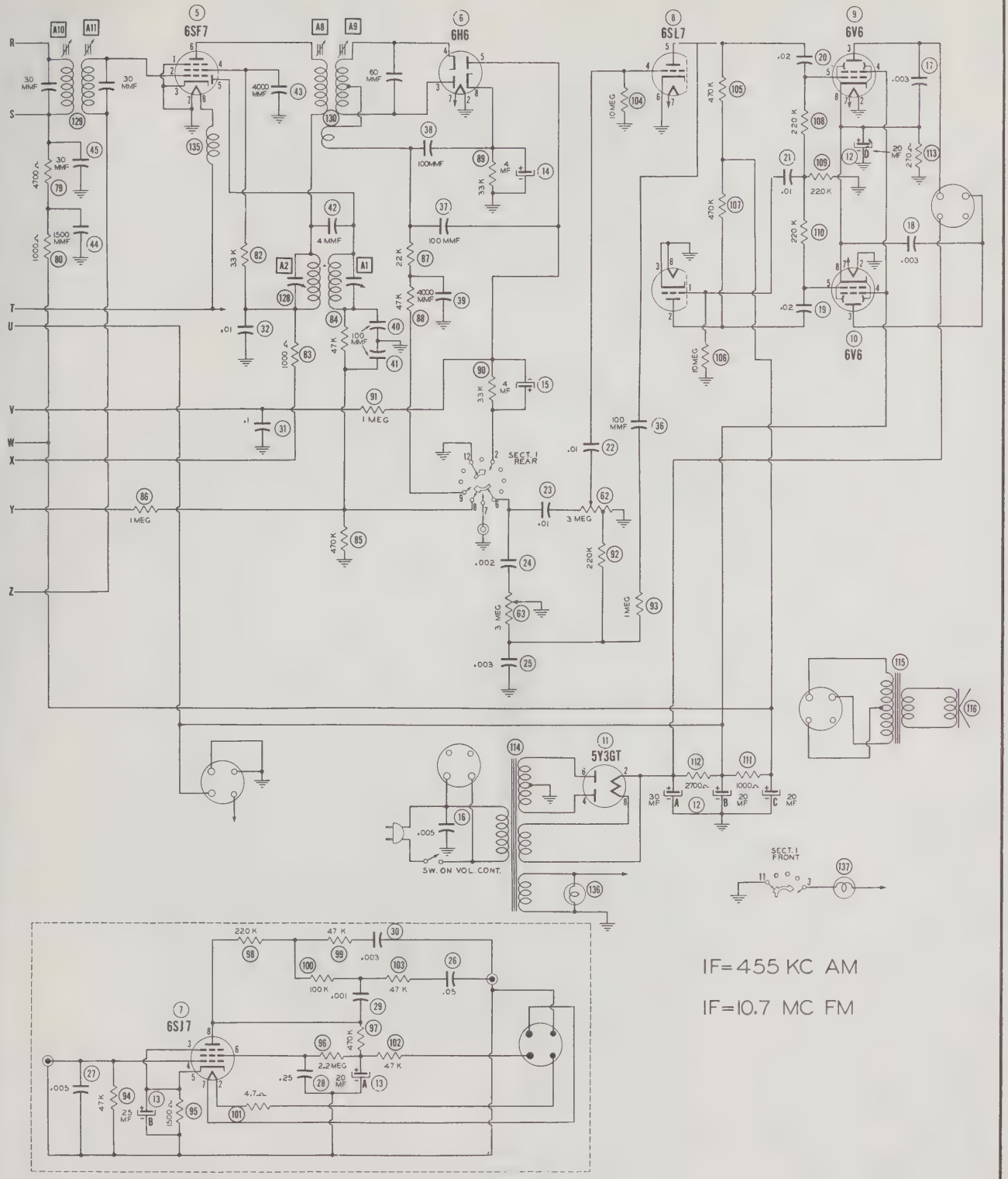

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200MMFD	High side to external AM Ant. lead. Low side to chassis.	455KC	AM (center position)	Tuning cap fully open.	Across Voice Coil	A1,A2 A3,A4	Adjust for max. output.
2.	200MMFD	"	1600KC	"	1600KC	"	A5	" " " "
3.	200MMFD	"	1500KC	"	Tune for maximum output.	"	A6	" " " "
4.	200MMFD	"	600KC	"	"	"	A7	Remove 6SL7 tube from socket. Rock tuning cap and adjust for maximum output. Repeat steps 2, 3, and 4 until no further improvement can be made.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE & OUTPUT METER

Use freq. mod. signal with 60Ω modulation and 300KC sweep except where noted.

Connect sync. sweep voltage from signal generator to scope horizontal input. The horizontal sweep voltage may be taken from the powerline if signal generator does not have a sync. voltage output. There may be some phase shift encountered between signal generator and scope horizontal sweep. If provision is made for this in the scope, rotate phase control until the two curves coincide. If no provision is made for this the same thing may be accomplished by inserting a cap of suitable value. (.01 to .1MFD) in series with the scope horizontal intput.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5.	3300MMFD	High side to pin 2 (Grid) of 6SF7. Low side to chassis.	10.7MC (freq. Mod.)	FM (fully clockwise)	Tuning cap fully open.	Vertical input to point (A) Ground to chassis.	A8,A9	Disconnect 4MFD cap (14) from point A. Adjust A9 counter-clockwise as far as possible. Adjust A8 for pattern per Fig 1. then adjust A9 for maximum amplitude and symmetry of pattern per Fig 2.
6.	3300MMFD	High side to pin 4 (Grid) of 6SG7. Low side to chassis.	"	"	"	"	A10, A11	Turn A11 out several turns. Adjust A10 for maximum amplitude and symmetry per Fig 1. Adjust A11 for maximum amplitude and symmetry per Fig 2.
7.	3300MMFD	High side to pin 8 (Grid) of 6SB7Y. Low side to chassis.	"	"	"	"	A12, A13	Adjust A13 counter-clockwise as far as possible. Adjust A12 for maximum amplitude and symmetry of pattern per Fig 1. Adjust A13 for maximum amplitude and symmetry of pattern per Fig 3. Reconnect cap (14) to point A.
8.	3300MMFD	"	"	"	"	Vertical input to point (B) Ground to chassis.		Pattern should appear as in Fig 4. If not adjust A8 & A9 for maximum amplitude and straightness of diagonal line with center of diagonal line at scope horizontal sweep line. Replace 6SL7 tube.
9.	300Ω carbon res.	High side to ungrounded FM Ant. terminal. Low side to chassis.	107.9MC (freq. mod. @ 400∿)	FM (fully clockwise.)	Channel 300	Across Voice Coil	A14	Adjust for maximum output.
10.	300Ω carbon res.	"	87.9MC (freq. mod @ 400∿)	"	Channel 200	"	A15	Adjust for maximum output. Repeat steps 9 and 10 until no further improvement can be made.
11.	300Ω carbon res.	"	105MC (freq. mod. @ 400∿)	"	Tune for maximum output(approx. 285)	"	A16	Rock tuning cap and adjust for maximum output.
12.	300Ω carbon res.	"	92MC (freq. mod. @ 400∿)	"	Tune for maximum output(approx. 220)	"	A17	Adjust for maximum output. Repeat step 11 & 12 until no further improvement can be made.
13.	300Ω carbon res.	"	105MC (freq. mod @ 400∿)	"	Tune for maximum output(approx. 285)	"	A18	Adjust for maximum output.
14.	300Ω carbon res.	"	92MC (freq. mod. @ 400∿)	"	Tune for maximum output(approx. 220)	"	A19	Adjust for maximum output. Repeat steps 13 and 14 until no further improvement can be made.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	3300MMFD	High side to pin 4 (Grid) of 6SG7. Low side to chassis.	10.7MC (Unmod.)	FM (fully clockwise)	Tuning cap fully open.	DC Probe to point (B) Common to chassis.	A8, A9	Adjust A9 counter-clockwise as far as possible. Adjust A8 for maximum deflection.
6.	3300MMFD	"	"	"	"	"	A10, A11	Adjust for maximum deflection.
7.	3300MMFD	High side to pin 8 (Grid) of 6SB7Y. Low side to chassis.	"	"	"	"	A12, A13	" " " "
8.	3300MMFD	"	"	"	"	"	A9	Adjust for zero deflection.
9.	300Ω carbon res.	High side to ungrounded FM Ant. terminal. Low side to chassis.	87.5MC (Unmod.)	"	Tuning cap fully closed.	DC Probe to point (A) Ground to chassis.	A15	Adjust for maximum deflection.
10.	300Ω carbon res.	"	108.5MC (Unmod.)	"	Tuning cap fully open.	"	A14	Adjust for maximum deflection. Repeat steps 9 & 10 until no further improvement can be made.
11.	300Ω carbon res.	"	92MC (Unmod.)	"	Tune for maximum deflection (approx 220)	"	A17, A19	Adjust for maximum deflection.
12.	300Ω carbon res.	"	105MC (Unmod.)	"	Tune for maximum deflection (approx.285)	"	A16, A18	Rock tuning cap and adjust for maximum deflection. Repeat steps 11 & 12 until no further improvement can be made.

FIG. 1

FIG. 2

FIG. 3

FIG. 4

PHOTOFACT* Folder

GAROD SERIES
10TZ, 12TZ, 15TZ

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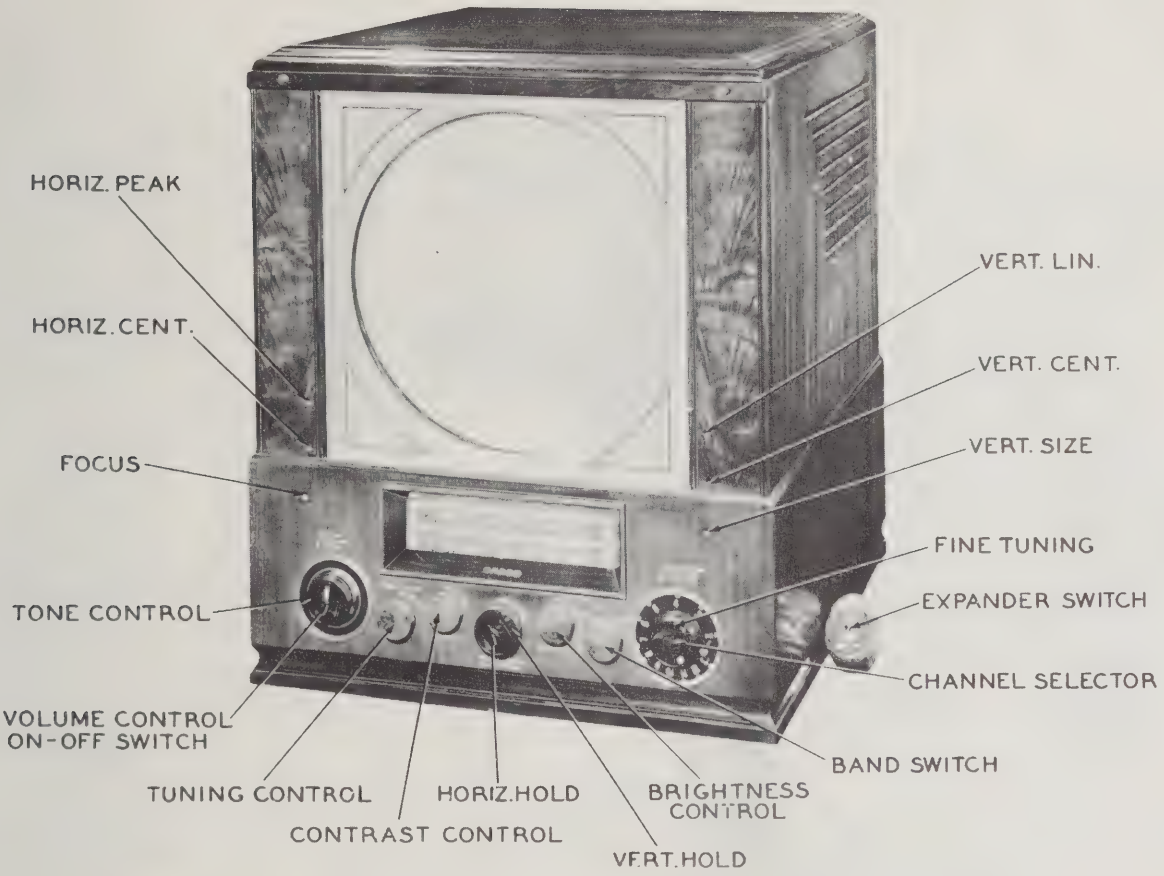

GAROD
SERIES 10TZ, 12TZ, 15TZ

TRADE NAME Garod Models 10TZ1, 2, 3, 4, 5, 12TZ1, 2, 3, 4, 5, 12TZ6A,12TZ7A,15TZ6,15TZ7
MANUFACTURER Garod Radio Corp., 70 Washington Street, Brooklyn 1, New York
TYPE SET AM FM Television Receiver
TUBES Twenty-nine. (Thirty-two in 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.)

POWER SUPPLY 105-125 Volts, 60 cycle AC — RATING 2.4 Amps @ 117 Volts. (3.05 Amps on 12TZ6A,7A,15TZ6,7)
TUNING RANGE—AM 540-1650KC, FM88-108MC Television Channels 2 thru 13.

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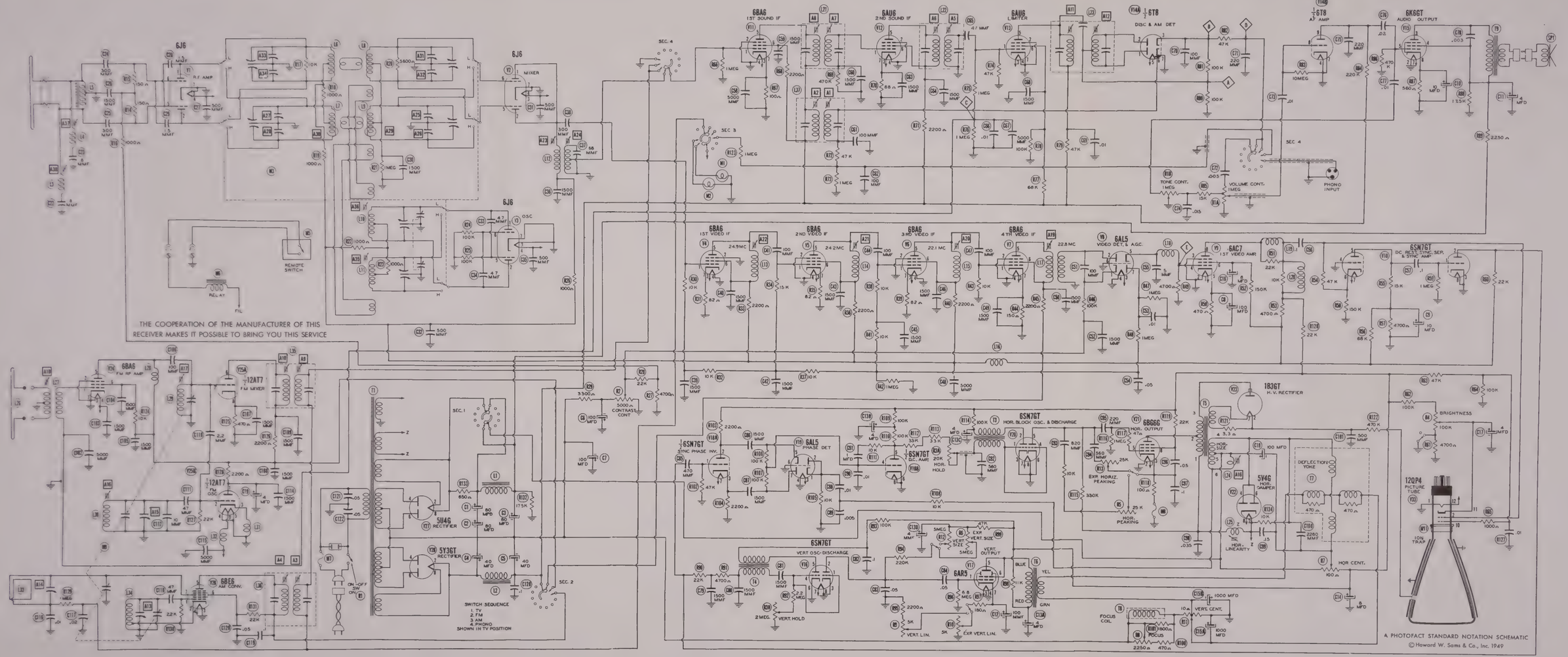

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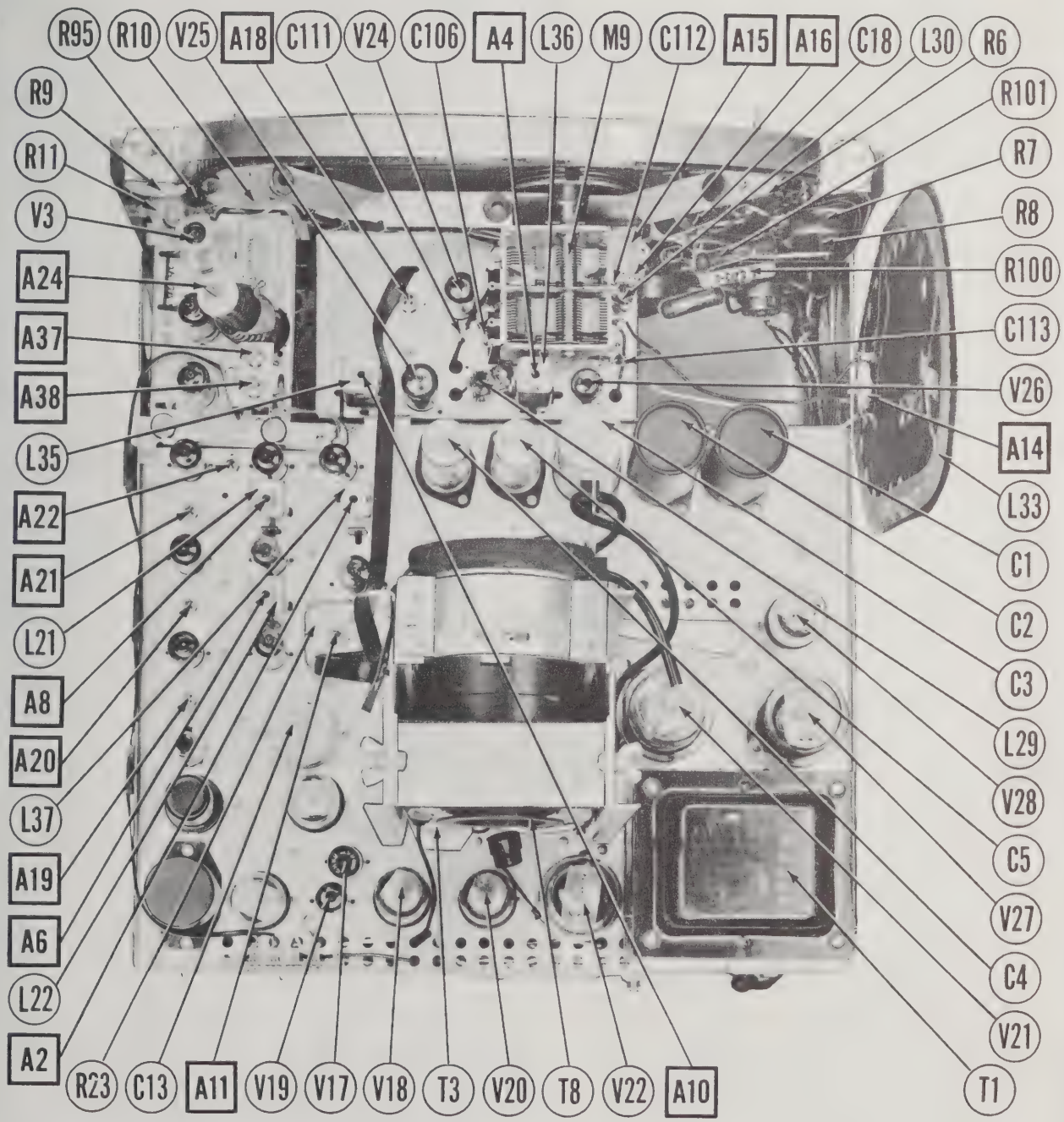
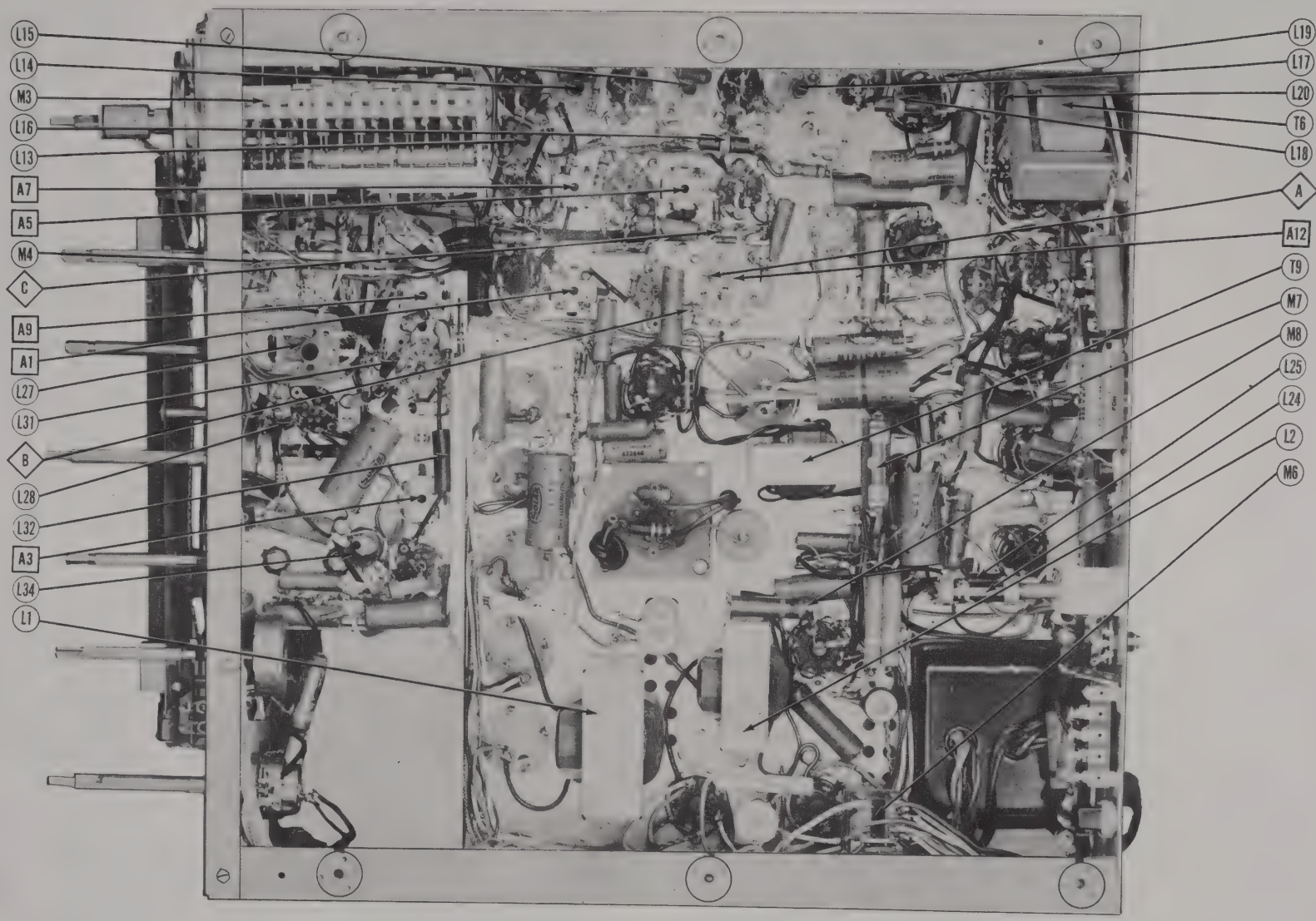
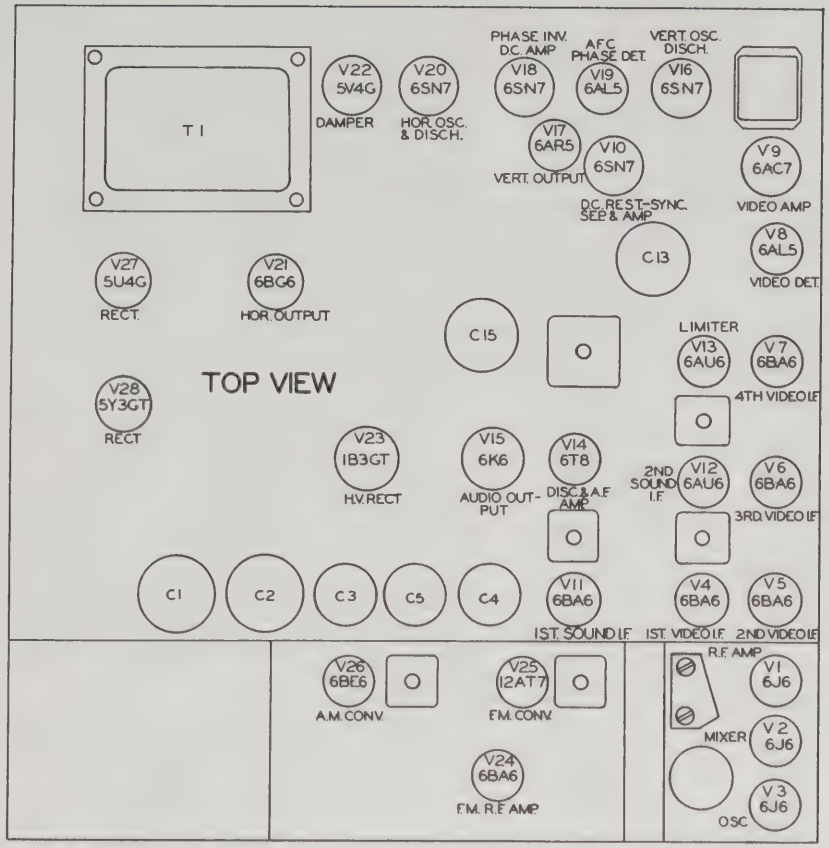
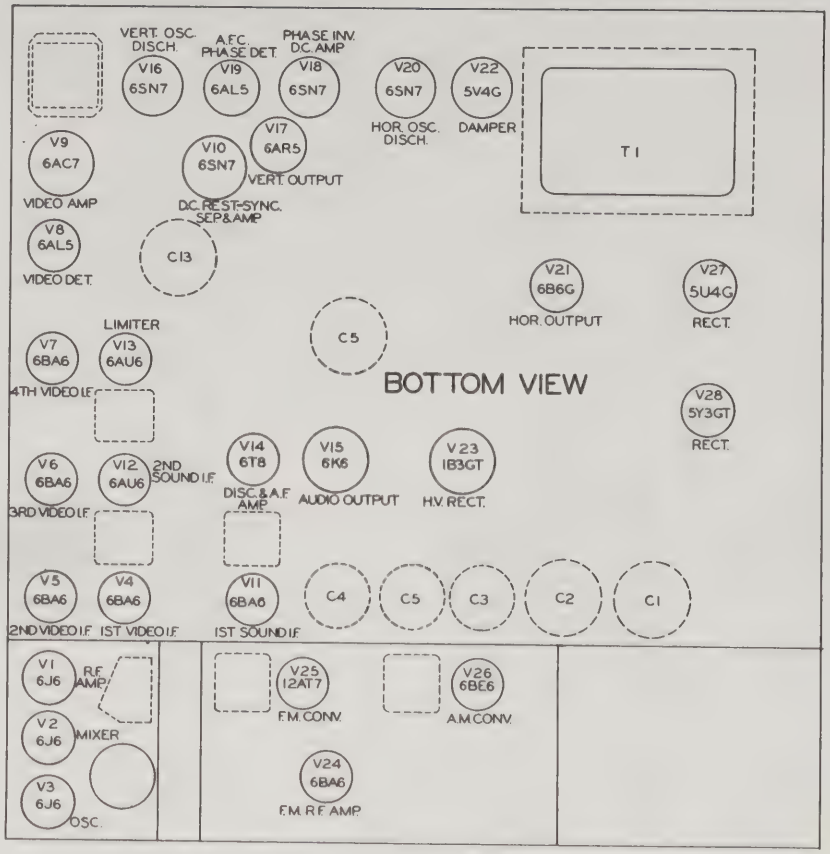


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

AM-FM ALIGNMENT

PRE-ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Remove the horizontal oscillator tube (V20) to disable the high voltage.
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) 6BE6 (V26). Low side to chassis.	455KC (Modulated)	AM	1650KC	Across Voice Coil	A1, A2 A3, A4	Adjust for max. Output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Use frequency modulated signal with 60∿ modulation and 1 MC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	BAND SWITCH POS.	CONNECT SCOPE	ADJUST	REMARKS
2.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V25). Low side to chassis.	20.25MC (1 MC Sweep)	20.25MC	FM	Vert. Amp. to point A. Low side to chassis.	A11,A5 A6,A7 A8, A9 A10	Adjust for maximum amplitude and symmetry with placement of marker as per Fig. 1.
3.	.01MFD	"	"	"	"	Vert. Amp. to point B. Low side to chassis.	A12	Adjust so crossover point occurrs at center of pattern as per Fig. 2. Slightly retouch A11 for maximum amplitude and straightness of cross over lines. Continue with step 5.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V25). Low side to chassis.	20.25MC	FM	108.5MC	DC Probe to point C. Common to chassis.	A5,A6 A7,A8 A9,A10	Adjust for maximum deflection.
3.	.01MFD	"	"	"	"	DC Probe to point A. Common to chassis.	A11	" " " "
4.	.01MFD	"	"	"	"	DC Probe to point B. Common to chassis.	A12	Adjust for zero reading. A positive and negative reading is obtained on either side of the correct setting.

AM-FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.		Loop	1650KC (Modulated)	AM	1650KC	Across Voice Coil	A13	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
6.		"	1500KC (Mod.)	"	Tune for max. signal.	"	A14	Adjust for maximum output.
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 150Ω carbon res.	Insert 150Ω in each generator lead and connect across FM Ant. terminals.	108.5MC (Unmod.)	FM	108.5MC	DC Probe to point C. Common to chassis.	A15	Adjust for maximum deflection.
8.	Two 150Ω carbon res.	"	87.5MC (Unmod.)	"	87.5MC	"	A16	Adjust for maximum deflection. Repeat steps 7 and 8.
9.	Two 150Ω carbon res.	"	95MC (Unmod.)	"	Tune for maximum deflection	"	A17, A18	Adjust for maximum deflection.

TV ALIGNMENT

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

This receiver incorporates the same sound IF system for both TV and FM reception, therefore the alignment for sound IF system is outlined under steps 2, 3, and 4 of AM-FM receiver alignment.

VIDEO IF ALIGNMENT

Remove the RF Amp. and oscillator tubes (V1 & V3) while making the following adjustments.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	5000MMF	High side to point D. Low side to chassis.	22.8MC (No Mod.)	8	Across Video Det. Load (R49)	A19	Adjust for max. deflection
11.	5000MMF	"	22.1MC	"	"	A20	" " " "
12.	5000MMF	"	24.2MC	"	"	A21	" " " "
13.	5000MMF	"	24.9MC	"	"	A22	" " " "
14.	5000MMF	"	21.75MC	"	"	A23	" " " "
15.	5000MMF	"	20.25MC	"	"	A24	Adjust for min. deflection

ALIGNMENT INSTRUCTIONS (CONT.)

OVERALL VIDEO IF RESPONSE CHECK

Connect the vertical amplifier of the oscilloscope a cross resistor R51. Connect the syncronized sweep voltage from the signal generator to the horizontal input of the oscilloscope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOK FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	5000MMF	High side to point D. Low side to chassis.	24MC (10MC Sweep)	20.25MC 21.8MC 24.2MC 24.75MC	8	Vert. Amp. across resistor R51.		Check pattern and placement of markers as per Fig.3. If necessary, slightly retouch A19 thru A23 to properly place markers.

RF AMP & MIXER ALIGNMENT

Replace the RF Amp tube V1 before starting the following alignment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 150Ω carbon res.	Insert 150Ω resistor in each lead and connect across the Antenna terminals.	213MC (10MC Sweep)	211.25MC and 215.75MC	13	Vert. Amp. to point D. Low side to chassis.	A25,A26 A27,A28	Adjust for response approximately as shown in Fig.4 with markers more than 70% of peak amplitude Keep RF and Mixer Trimmer pairs in approximately same relative position.
18.	Two 150Ω carbon res.	"	177MC (10MC Sweep)	175.25MC and 179.75MC	7	"	A29,A30	Adjust rings for waveform as shown in Fig.4.
19.	Two 150Ω carbon res.	"	183MC (10MC Sweep)	181.25MC and 185.75MC	8	"		Check response on channels 8 thru 12. Slight adjustment of A25, A26, A27 and A28 may be required to obtain optimum performance on all channels.
			189MC (10MC Sweep)	187.25MC and 191.75MC	9			
			195MC (10MC Sweep)	193.25MC and 197.75MC	10			
			201MC (10MC Sweep)	199.25MC and 203.75MC	11			
			207MC (10MC Sweep)	205.25MC and 209.75MC	12			
20.	Two 150Ω carbon res.	"	85MC (10MC Sweep)	83.25MC and 87.75MC	6	"	A31,A32 A33,A34	Adjust for response shown in Fig. 4.
21			79MC (10MC Sweep)	77.25MC and 81.75MC	5			Check response on channels 2 thru 5. Slight adjustment of A31, A32, A33 and A34 may be required to obtain optimum response on all channels.
			69MC (10MC Sweep)	67.25MC and 71.75MC	4			
			63MC (10MC Sweep)	61.25MC and 65.75MC	3			
			57MC (10MC Sweep)	55.25MC and 59.75MC	2			

OSCILLATOR ALIGNMENT

Replace the oscillator tube V3 before making the following adjustments. Set the fine tuning control to the midpoint of its tuning range.

The oscillator tube in this tuner is specially selected for low microphonism. Should microphonics be experienced it is suggested the mixer and RF tube be tried as an oscillator. If these tubes are also microphonic, try other 6J6 tubes until one is found that is satisfactory.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
22.	Two 150Ω carbon res.	Insert 150Ω in each generator lead and connect across Antenna terminals.	215.75MC	13	DC Probe to point C. Common to chassis.	A35	Adjust for max. deflection
23.	Two 150Ω carbon res.	"	87.75MC	6	"	A36	" " " "

24. Check to see that all other channels are received well within the limits of the fine tuning control. If not, some compromise may be made by adjusting A35 for the high-band channels and A36 for the low-band channels.

25. Wave traps A37 and A38 are used for specific types of interference and their alignment will depend upon the type encountered. With the receiver tuned to the channel having the interference set fine tuning control until interference is at maximum. Adjust A37 and A38 for minimum interference in the picture and sound keeping the cores at apporximately the same relative position. Turn one core 1/2 turn adjust the other for minimum interference.

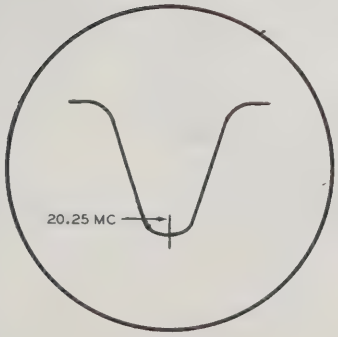


FIG. 1

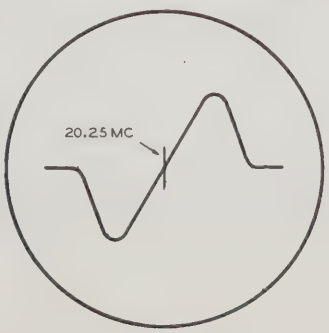


FIG. 2

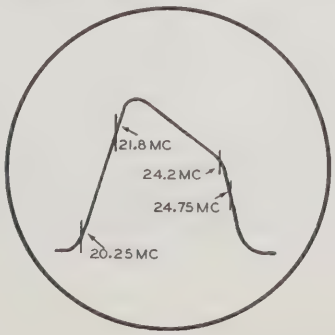


FIG. 3

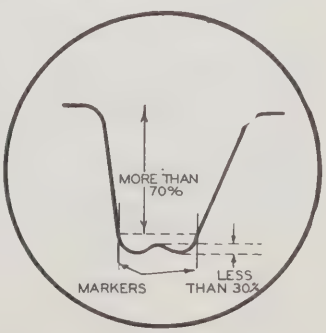


FIG. 4

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6J6	138VDC	138VDC	0V	6.3VAC	-4VDC	-4VDC	0V		
V2	6J6	125VDC	125VDC	6.3VAC	0V	-.8VDC	-.8VDC	0V		
V3	6J6	120VDC	120VDC	0V	6.3VAC	§-5.2VDC	§-5.2VDC	0V		
V4	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	.3VDC		
V5	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	.3VDC		
V6	6BA6	-3VDC	0V	6.3VAC	0V	138VDC	138VDC	.3VDC		
V7	6BA6	0V	0V	6.3VAC	0V	120VDC	120VDC	1.2VDC		
V8	6AL5	-19VDC	0V	6.3VAC	0V	.1VDC	0V	-19VDC		
V9	6AC7	0V	0V	0V	.1VDC	2.9VDC	175VDC	6.3VAC	320VDC	
V10	6SN7GT	-.3VDC	60VDC	0V	0V	7.8VDC	.9VDC	6.3VAC	0V	
V11	6BA6	0V	0V	6.3VAC	0V	145VDC	138VDC	.3VDC		
V12	6AU6	0V	0V	6.3VAC	0V	128VDC	128VDC	.6VDC		
V13	6AU6	-.4VDC	0V	6.3VAC	0V	40VDC	50VDC	0V		
‡ V14A	6T8	-.6VDC	-.6VDC	-.1VDC	6.3VAC	0V	-.7VDC	0V	-.6VDC	70VDC
♦ V14B	6T8	-.7VDC	-.7VDC	-.1VDC	6.3VAC	0V	-.6VDC	0V	-.6VDC	85VDC
V15	6K6GT	0V	0V	235VDC	245VDC	0V	0V	6.3VAC	16.5VDC	
V16A	6SN7GT	-122VDC	15VDC 260VDC	0V	-122VDC	320VDC	0V	6.3VAC	0V	
■ V16B	6SN7GT	-127VDC	25VDC 280VDC	0V	-127VDC	340VDC	0V	6.3VAC	0V	
V17A	6AR5	0V	1VDC 44VDC	6.3VAC	0V	212VDC	212VDC	0V		
■ V17B	6AR5	-5VDC	25VDC 53VDC	6.3VAC	0V	245VDC	245VDC	-5VDC		
V18	6SN7GT	0V	340VDC	13VDC	-.2VDC	14VDC	0V	6.3VAC	0V	
V19	6AL5	-.1VDC	-.1VDC	6.3VAC	0V	1VDC	0V	1.3VDC		
V20	6SN7GT	-40VDC	250VDC	0V	-40VDC	185VDC	0V	6.3VAC	0V	
V21A	6BG6G	0V	0V	-28VDC -34VDC	-43VDC	-34VDC	-34VDC	6.3VAC	205VDC	TOP CAP †
■ 21B	6BG6G	0V	0V	-24VDC -32VDC	-43VDC	-35VDC	-35VDC	6.3VAC	205VDC	TOP CAP †
V22	5V4G	0V	440VDC	0V	360VDC	0V	360VDC	0V	440VDC	
V23	1B3GT	† DO NOT MEASURE								
‡ V24	6BA6	-.7VDC	0V	0V	6.3VAC	185VDC	120VDC	0V		
‡ V25	12AT7	170VDC	§-2.8VDC	0V	0V	0V	175VDC	0V	1VDC	6.3VAC
♦ V26	6BE6	§-6.6VDC	0V	0V	6.3VAC	200VDC	85VDC	-.1VDC		
V27	5U4G	0V	415VDC	380VDC	400VAC	0V	400VAC	0V	415VDC	
V28	5Y3GT	0V	208VDC	410VDC	215VAC	0V	215VAC	0V	208VDC	
V29	6AT6	0V	1VDC	6.3VAC	0V	0V	0V	150VDC		
V30	6V6GT	0V	6.3VAC	300VDC	300VDC	0V	0V	0V	14VDC	
V31	6V6GT	0V	6.3VAC	300VDC	300VDC	0V	0V	0V	14VDC	
V32	5Y3GT	0V	340VDC	0V	320VAC	0V	320VAC	0V	340VDC	
V33	12QP4	0V	.7VDC	PIN 10 230VDC	PIN 11 155VDC	PIN 11 ■165VDC	PIN 12 6.3VAC			

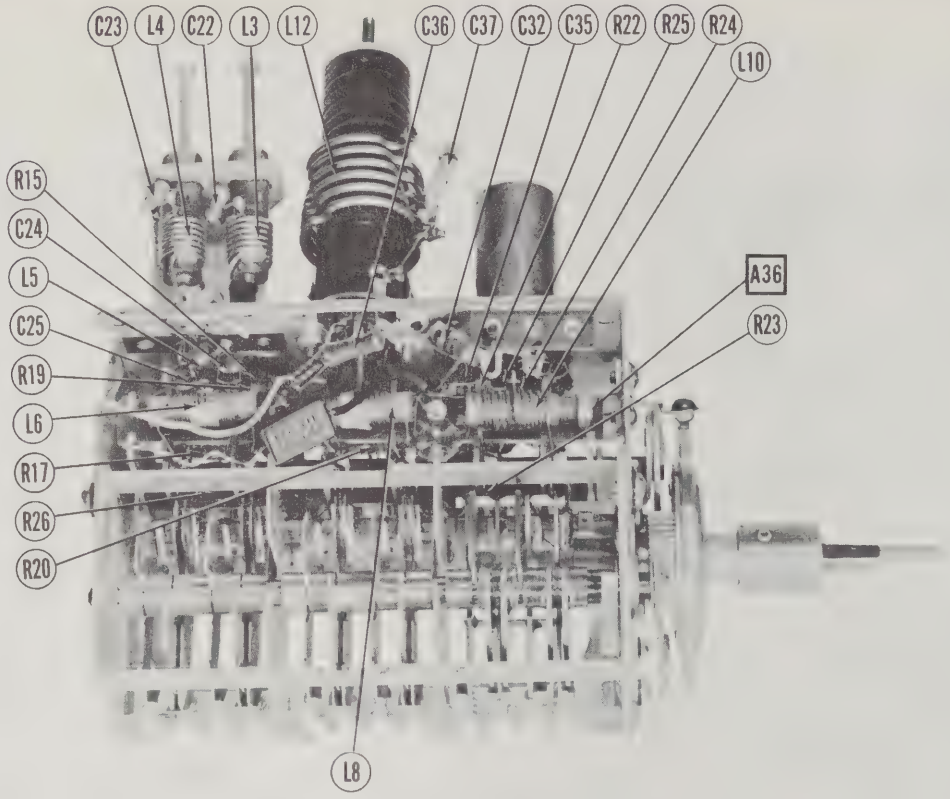
■ Taken in normal position.
‡ Taken with band switch in TV position.
§ Taken with VTVM
♦ Taken in BC position.
‡ Taken in AM position.

RESISTANCE READINGS

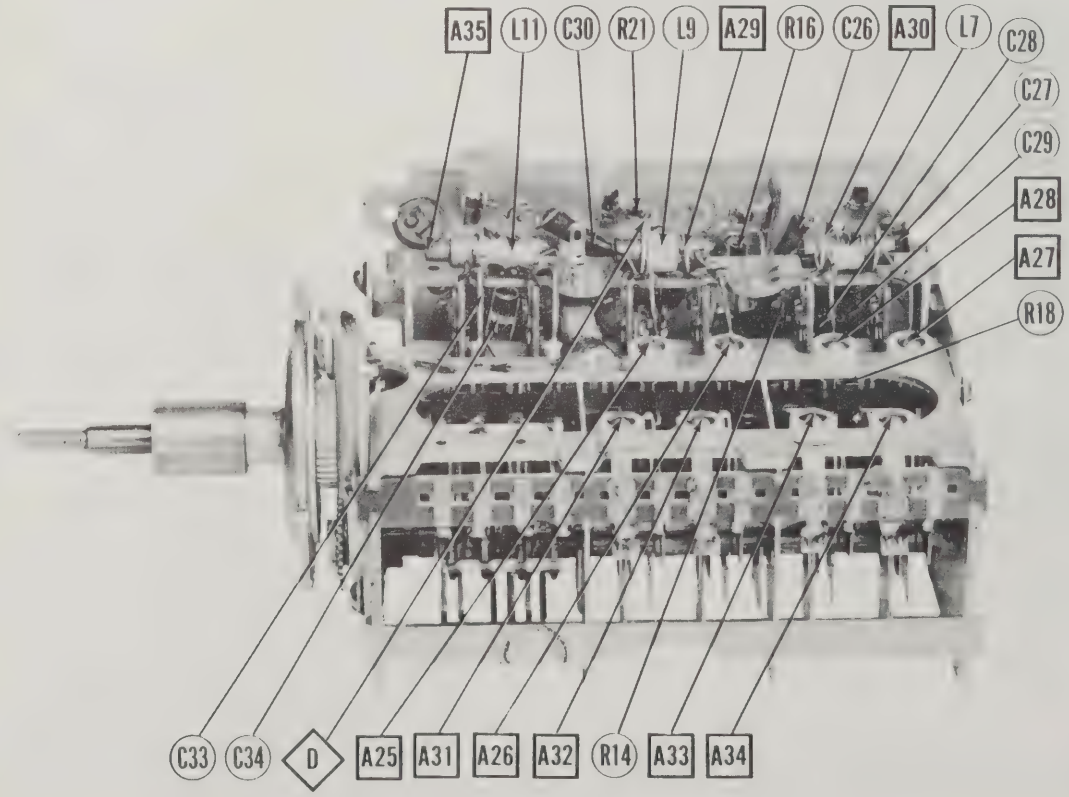
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6J6	*1000Ω	*1000Ω	0Ω	.2Ω	4.7KΩ	4.7KΩ	0Ω		
V2	6J6	*1000Ω	*1000Ω	.2Ω	0Ω	1 Meg.	1 Meg.	0Ω		
V3	6J6	*1000Ω	*1000Ω	0Ω	.2Ω	100KΩ	100KΩ	0Ω		
V4	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V5	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V6	6BA6	700KΩ	0Ω	.2Ω	0Ω	*2.3KΩ	*2.3KΩ	82Ω		
V7	6BA6	10KΩ	0Ω	.2Ω	0Ω	*2KΩ	*2KΩ	180Ω		
V8	6AL5	100KΩ	.5Ω	.2Ω	0Ω	4.7KΩ	0Ω	650KΩ		
V9	6AC7	0Ω	0Ω	0Ω	4.7KΩ	470Ω	** 150KΩ	.2Ω	** 4.7KΩ	
V10	6SN7GT	1 Meg.	*22KΩ	0Ω	0Ω	*68KΩ	150KΩ	.2Ω	0Ω	
V11	6BA6	0Ω	0Ω	.2Ω	0Ω	*75Ω	*2.2KΩ	100Ω		
V12	6AU6	470KΩ	0Ω	.2Ω	0Ω	*2KΩ	*2KΩ	68Ω		
V13	6AU6	47KΩ	0Ω	.2Ω	0Ω	*47KΩ	*50KΩ	0Ω		
‡ V14A	6T8	100KΩ	100KΩ	200KΩ	.2Ω	0Ω	1 Meg.	0Ω	10 Meg.	* 220KΩ
♦ V14B	6T8	100KΩ	100KΩ	200KΩ	.2Ω	0Ω	750KΩ	0Ω	10 Meg.	* 220KΩ
V15	6K6GT	0Ω	0Ω	** 2.6KΩ	** 2.2KΩ	470KΩ	Inf.	.2Ω	560Ω	
V16	6SN7GT	4.2 Meg.	** 5Meg. **250KΩ	0Ω	4.2 Meg.	** 100KΩ	0Ω	.2Ω	0Ω	
V17	6AR5	6.8 Meg.	5KΩ 180Ω	.2Ω	0Ω	** 12KΩ	**12KΩ	6.8Meg.		
V18	6SN7GT	47KΩ	** 2.5KΩ	2.2KΩ	Inf.	** 200KΩ	0Ω	.2Ω	0Ω	
V19	6AL5	10KΩ	10KΩ	.2Ω	0Ω	Inf.	0Ω	Inf.		
V20	6SN7GT	300KΩ	** 100KΩ	0Ω	300KΩ	** 380KΩ	0Ω	.2Ω	0Ω	
V21	6BG6G	Inf.	0Ω	340Ω	230Ω	1 Meg.	1 Meg.	.2Ω	** 11KΩ	** 10KΩ
V22	5V4G	Inf.	** 10KΩ	Inf.	** 100Ω	Inf.	** 100Ω	Inf.	** 10KΩ	
V23	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	** 10KΩ
‡ V24	6BA6	500KΩ	0Ω	0Ω	.2Ω	*62Ω	*10KΩ	0Ω		
‡ V25	12AT7	*2.2KΩ	22KΩ	1Ω	0Ω	0Ω	*2.2KΩ	0Ω	470Ω	.2Ω
V26	6BE6	22KΩ	.5Ω	0Ω	.2Ω	*75Ω	*22KΩ	1.5 Meg.		
V27	5U4G	Inf.	12KΩ	12KΩ	250Ω	Inf.	250Ω	Inf.	12KΩ	
V28	5Y3GT	Inf.	90KΩ	10KΩ	240Ω	Inf.	240Ω	Inf.	90KΩ	
V29	6AT6	12KΩ	3.3KΩ	.2Ω	0Ω	0Ω	0Ω	† 200KΩ		
V30	6V6GT	0Ω	.2Ω	†830Ω	†650Ω	470KΩ	Inf.	0Ω	220Ω	
V31	6V6GT	0Ω	.2Ω	†850Ω	†650Ω	480KΩ	Inf.	0Ω	220Ω	
V32	5Y3GT	Inf.	160KΩ	Inf.	120Ω	Inf.	115Ω	Inf.	160KΩ	
V33	12QP4	0Ω	190KΩ	PIN 10 **38KΩ	PIN 11 **50KΩ	PIN 12 .2Ω				

‡ Taken with band switch in TV position.
* Measured from pin 8 of V28
** Measured from pin 8 of V27
† Measured from pin 8 of V32
‡ Taken in FM position
♦ Taken in BC position

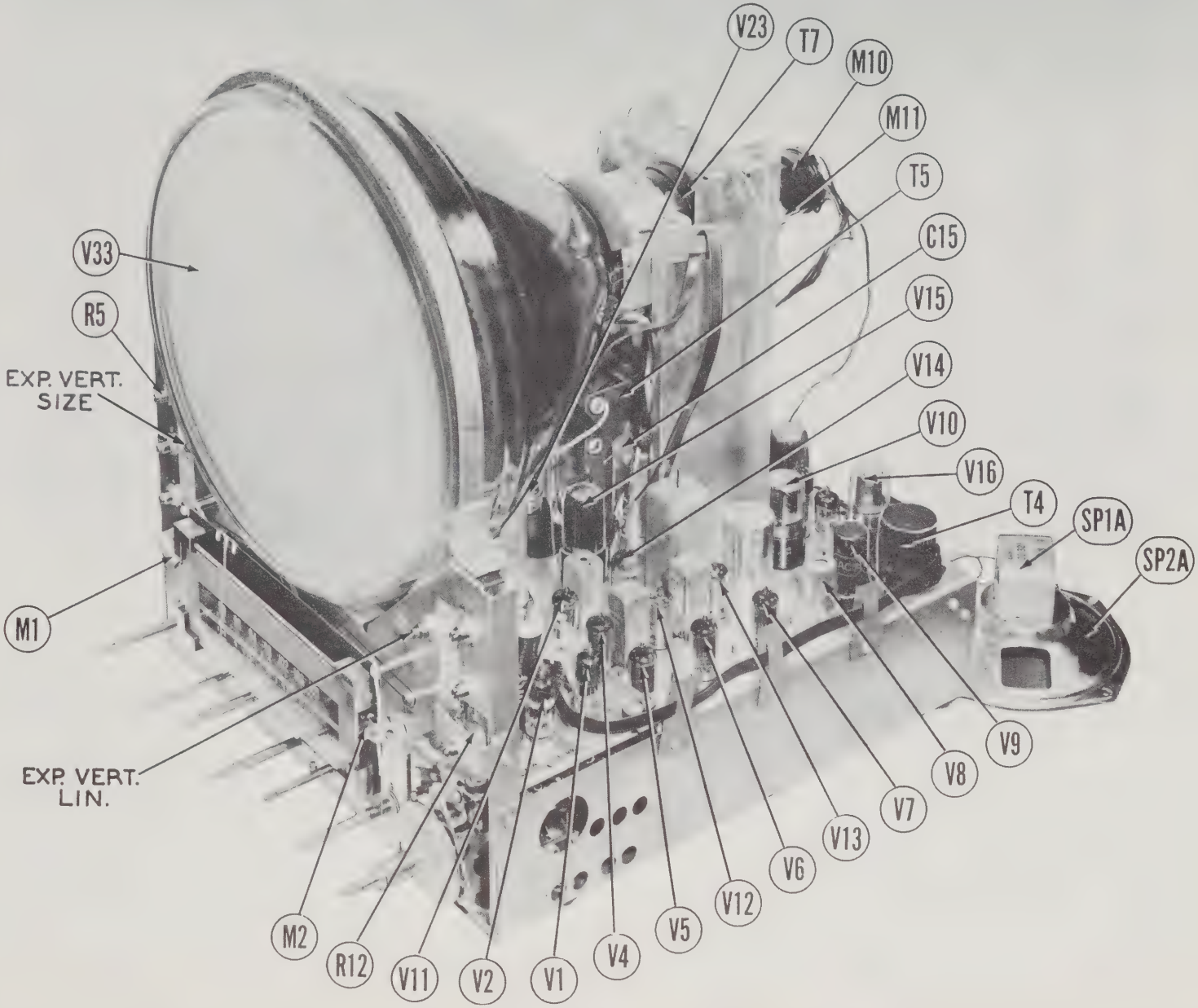
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



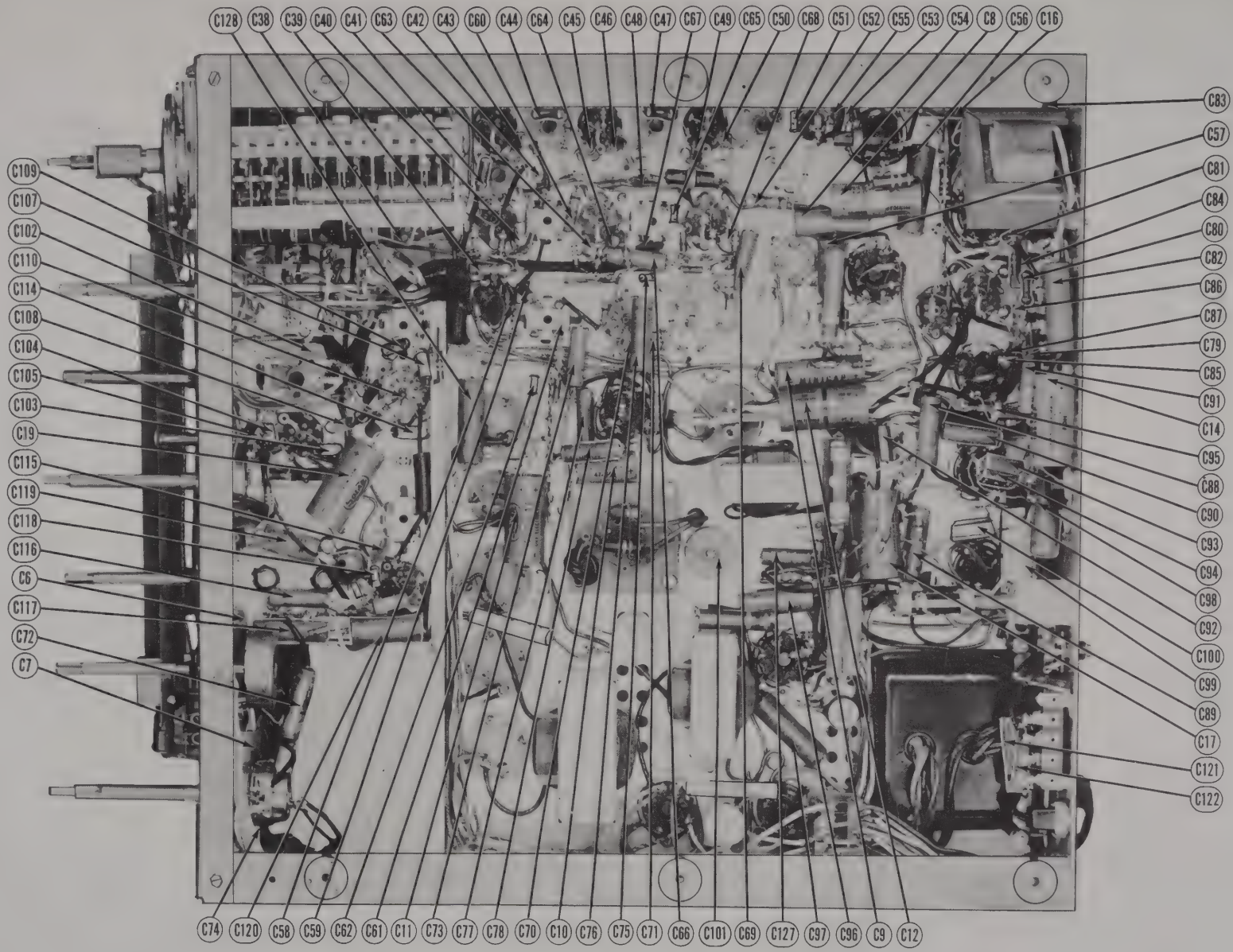
RF TUNER-LEFT SIDE



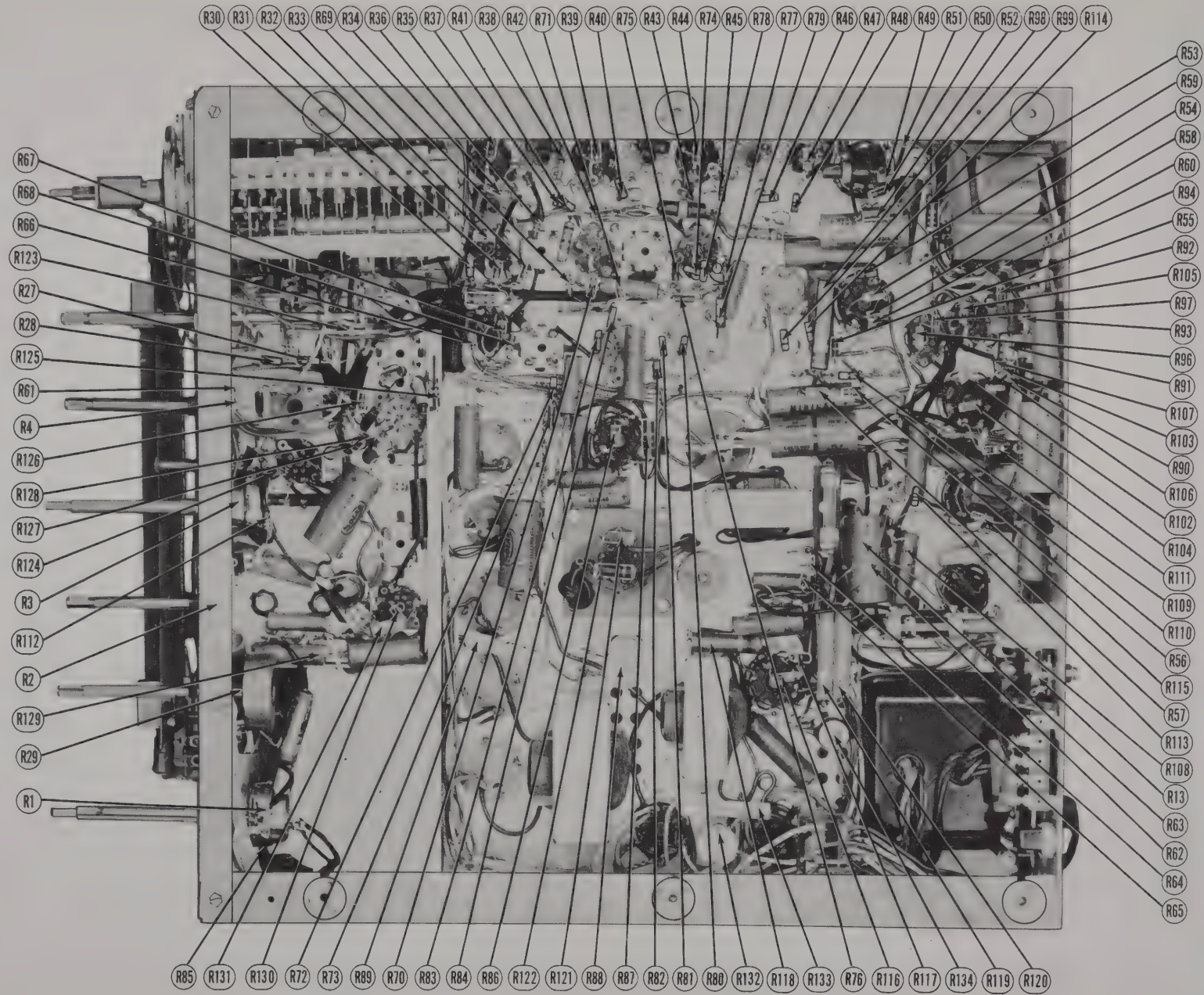
RF TUNER-RIGHT SIDE



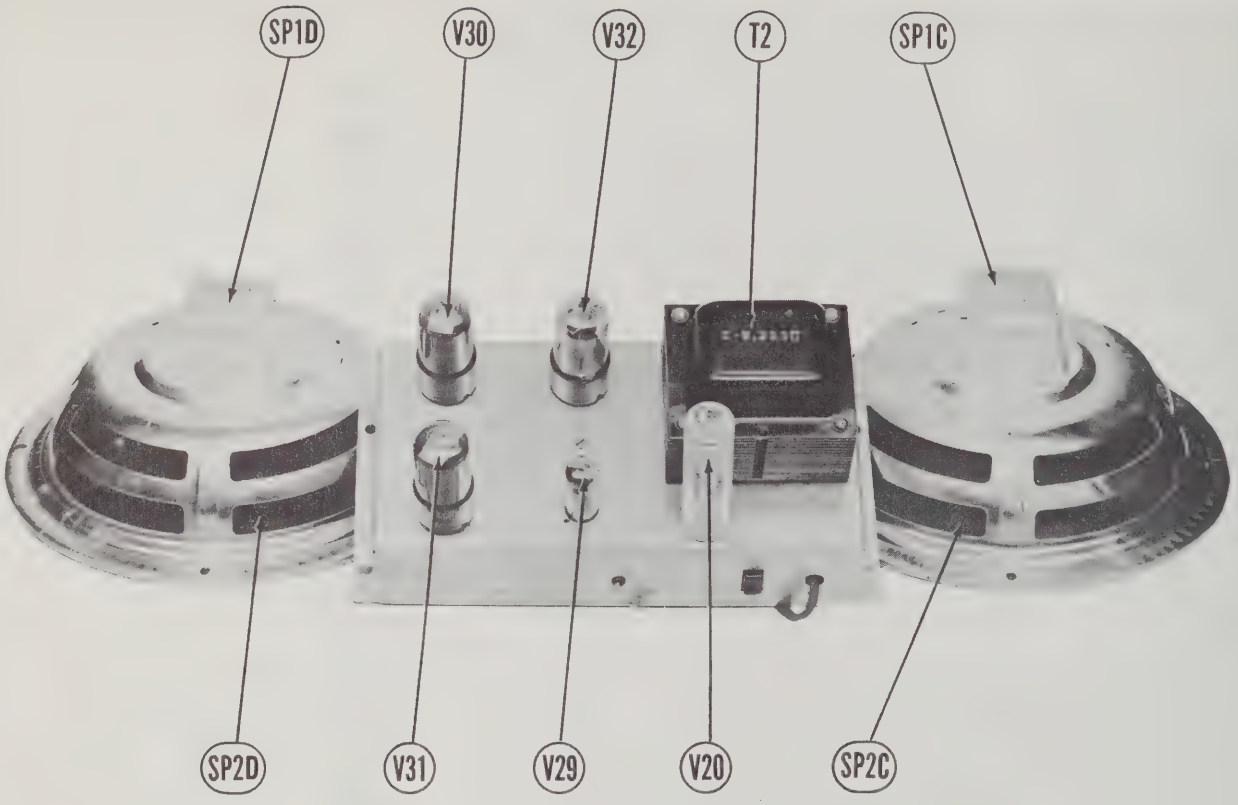
CHASSIS–TOP VIEW



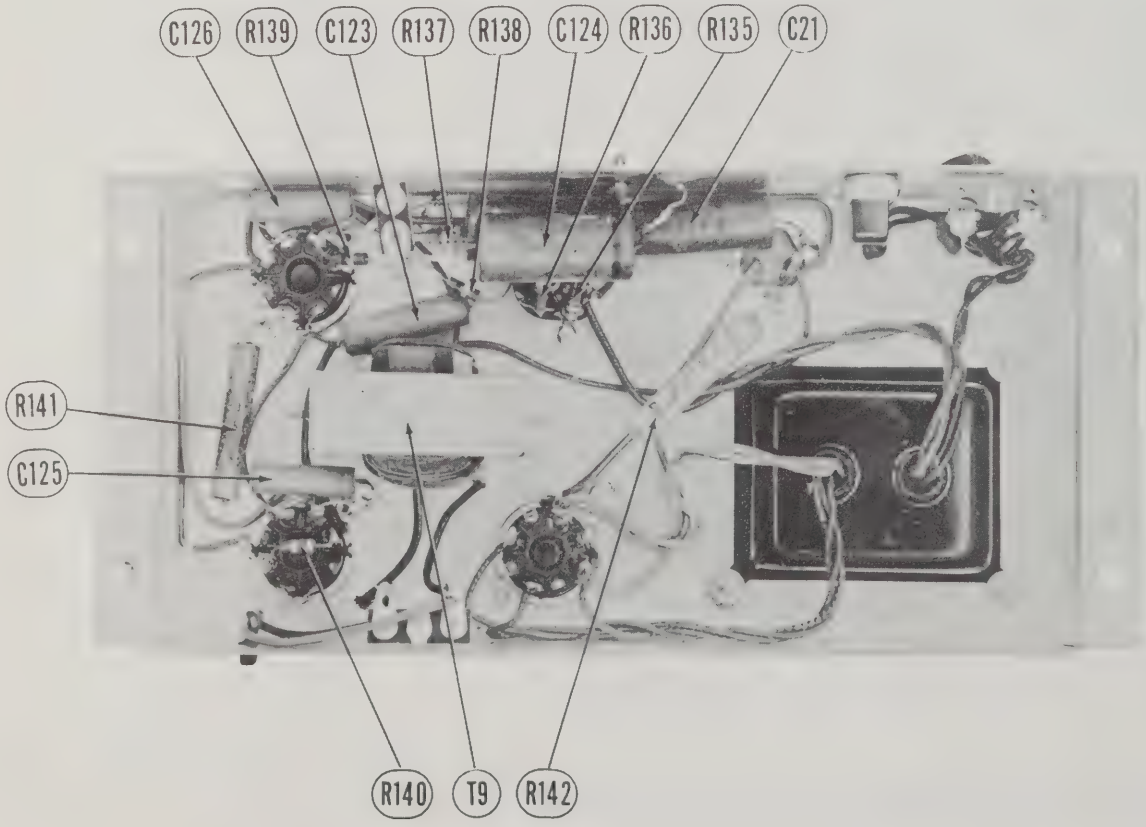
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



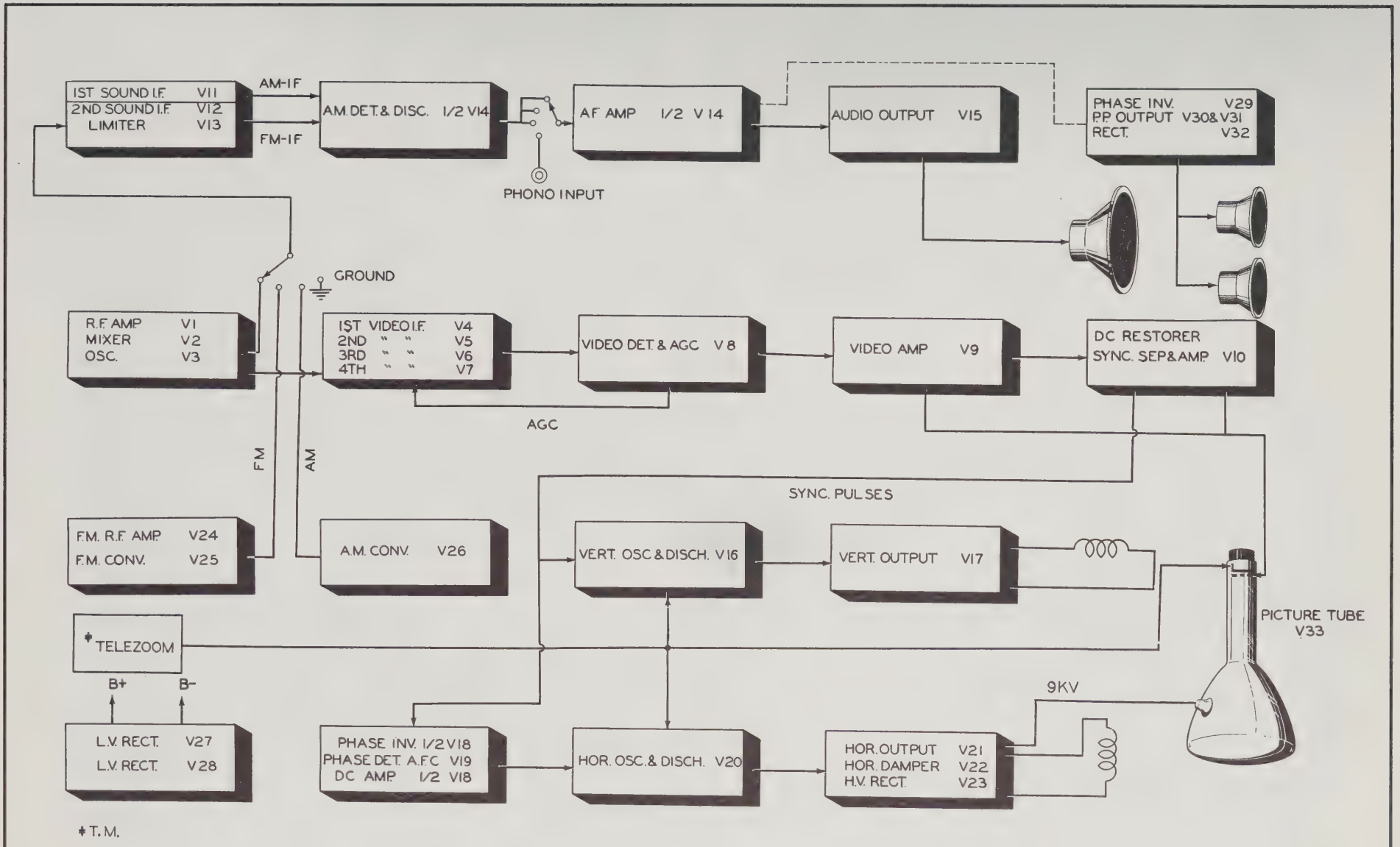
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



AMPLIFIER UNIT - TOP VIEW



AMPLIFIER UNIT - BOTTOM VIEW



BLOCK DIAGRAM

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6J6	6J6	7BF	
V2	Mixer	6J6	6J6	7BF	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF	6BA6	6BA6	7BK	
V5	2nd " "	6BA6	6BA6	7BK	
V6	3rd " "	6BA6	6BA6	7BK	
V7	4th " "	6BA6	6BA6	7BK	
V8	Video DET & AGC	6AL5	6AL5	6BT	
V9	Video Amp.	6AC7	6AC7	8N	
V10	DC Restorer-Sync. Sep.& Amp	6SN7GT	6SN7GT	8BD	
V11	1st Sound IF	6BA6	6BA6	7BK	
V12	2nd " "	6AU6	6AU6	7BK	
V13	Limiter	6AU6	6AU6	7BK	
V14	Disc.-AF Amp.	6T8	6T8		
V15	Audio Ouput	6K6GT	6K6GT	7S	
V16	Vert. Osc.-Discharge	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6AR5	6AR5		
V18	Phase Inv.-DC Amp.	6SN7GT	6SN7GT	8BD	
V19	Phase Det.-AFC	6AL5	6AL5	6BT	
V20	horiz. Osc.-Discharge	6SN7GT	6SN7GT	8BD	
V21	Sepric. Output	6BG6G	6BG6G	5ET	
V22	Damper	5V4G	5L		
V23	HV Rectifier	1B3GT	1B3GT	3C	
V24	FM RF Amp.	6BA6	6BA6	7BK	
V25	FM Converter	12AT7	12AT7		
V26	AM Converter	6BE6	6BE6	7CH	
V27	Rectifier	5U4G	5U4G	5T	
V28	Rectifier	5Y3GT	5Y3GT	5T	
V29	Phase Inv.	6AT6	6AT6	7BT	
V30	Power Output	6V6GT	6V6GT	7AC	
V31	Power Output	6V6GT	6V6GT	7AC	
V32	Rectifier	5Y3GT	5Y3GT	5T	
V33A	Picture Tube	10BP4	10BP4		Used in models 10TZ1, 2, 3, 4, 5
B	" "	10FP4	10FP4		Used " " " " "
C	" "	12QP4	12QP4		" " " " 12TZ1, 2, 3, 4, 5
D	" "	12JP4	12JP4		" " " "
E	" "	12KP4	12KP4		" " " " 12TZ4, 5, 6A, 7A
F	" "	12LP4	12LP4		" " " " 12TZ1, 2, 3, 4, 5
G	" "	12TP4	12TP4		" " " " 12TZ4, 5, 6A, 7A
H	" "	15AP4	15AP4		" " " " 15TZ6, 7
I	" "	15CP4	15CP4		" " " "

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	80	350	C-5.421-3	AF88J Ø	4050			TVL-5	Filter
C2	80	350	C-5.421-3	AF88J	UP8045			TVL-5	"
C3	80	500	C-5.421-2		UP8050			TVL-9	"
C4	40	450	C-5.400-9	AF8J	UP4045			TVL-45	"
C5	40	450	C-5.400-9	AF8J	UP4045			TVL-45	"
C6	100	25	C-5.420-1	PRS25/100	BRH251A			TVA-8	Contr. Cont. Bypass
C7	100	50	C-5.420-2	PRS50/100	BRH501			TVA-17	Bias Filter
C8	100	25	C-5.420-1	PRS25/100	BRH251A			TVA-8	Video Amp. Cath. Bypass
C9	10	25	B-5.413	PRS25/10	BRR10-25			TVA-5	Decoupling
C10	10	25	B-5.413	PRS25/10	BRR10-25			TVA-5	S. Output Cath. Bypass
C11	4	450	B-5.418	PRS450/4	BR445			UT-4	" " Decoupling *
C12	100	50	C-5.420-2	PRS50/100	BRH501			TVA-17	Vert. Output Cath. Byp.
C13A	4	450	C-5.421-1	AF222J	UP1111-45			EL-410	" " " Decoupling
B	4	450							DC Amp Decoupling
C	4	450							Hor. Osc. Decoupling
D	4	450							Decoupling
C14	8	450	B-5.428	PRS450/8	BR845			UT-8	" "
C15A	1000	6	C-5.422	PRS6/1000	BRH610			TVA-1	Vert. Cent. Bypass
B	1000	6		PRS6/1000	BRH610			TVA-1	" " "
C16	8	450	B-5.428						Video Amp. Screen Byp.
C17	4	450	B-5.418	PRS450/4	BR445			UT-4	Decoupling
C18	100	25	C-5.420-1	PRS25/100	BRH251A			TVA-8	Hor. Cent. Bypass
C19	4	450	B-5.418	PRS450/4	BR445			UT-4	FM Osc. Plate Bypass
C20A	20	450	C-5.400-4	AF44J	UP2245		DY-2X20-450	EL-220	Filter
B	20	450							"
C21	8	100	B-5.426	PRS150/8	BR815		M-8-150	UT-81	Phase Inv. Cath. Bypass
C22	8								Fixed Trimmer
C23	8								" "
C24	300					GP2K-300			RF Coupling
C25	300					GP2K-300			"
C26	1500					GP22-015			AGC Filter
C27	500					GP2K-500			RF Fil. Bypass
C28	1.5					N750K-1.5			Neutralizing
C29	1.5					N750K-1.5			"
C30	1500					GP2L-0015			Mixer Grid Filter
C31	500					GP2K-500			Mixer Fil. Bypass
C32	500					GP2K-500			RF Bypass
C33	4.7					NPOK-5			Osc. Feedback
C34	4.7					NPOK-5			Osc. Feedback
C35	500					GP2K-500			Osc. Fil. Bypass
C36	1500					GP2L-0015			Mixer Plate Decoup.
C37	68								Fixed Trimmer
C38	300	500				GP2K-300			IF Coupling
C39	1500		D-4.108-12	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	AGC Filter
C40	1500		D-4.108-12	1467-0015	1W5D15	GP2L-0015	MW.5-215	1FM-215	1st V. IF Decoupling
C41	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	IF Coupling
C42	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	AGC Filter
C43	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	2nd V. IF Decoupling
C44	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	IF Coupling
C45	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	AGC Filter
C46	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	3rd V IF Decoupling
C47	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	IF Coupling
C48	5000		B-4.115-1	1467-005	1D5D5	GP2M005	MW.5-25	1FM-25	RF Bypass
C49	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	4th V. IF Cath. Byp.
C50	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	" " " Decoupling
C51	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	IF Coupling
C52	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	RF Bypass
C53	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AGC Diode Filter
C54	05	400	D-3.100-19	P488-05	GT4S5		ST-4-05	TM-15	AGC Filter
C55	5		4.111-6	1468-.000005	5W5Y5	NP0K-5	MO.5-55	MS-55	Diode Filter
C56	.1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	Video Coupling
C57	.1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	Sync. Coupling
C58	5000		B-4.115-1	1467-005	1D5D5	GP2M.005	MW.5-25	1FM-25	1st S. Cath. Bypass
C59	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	" " Screen "
C60	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	2nd S. Grid Filter
C61	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	Diode Filter
C62	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	" "
C63	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	3rd S. Cath. Bypass
C64	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	" " " Decoupling
C65	47		C-4.109-12	1468-00005	5W5Q5	GP1K50	MO.5-45	1FM-45	IF Coupling
C66	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
C67	5000		B-4.115-1	1467-005	1D5D5	GP2M.005	MW.5-25	1FM-25	" "
C68	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	Limiter Screen Bypass
C69	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Limiter Plate Decoup.
C70	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	RF Bypass
C71	220		C-4.109-11	1468-00025	5W5T25	GP2K200	MO.5-325	1FM-325	De-emphasis
C72	005	600	D-3.100-4	P688-005	GT6J5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C73	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C74	015	200	D-3.100-43	P288-015	GT2S15		ST-4-01	TM-11	Tone Compensation
C75	220		C-4.109-11	1468-00025	5W5T25	GP2K250	MO.5-325	1FM-325	AF Plate Bypass
C76	02	400	D-3.100-11	P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling
C77	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Tone Compensation
C78	003	600	D-3.100-3	P688-003	GT6D3	GP2M003	ST-6-003	TM-23	Output Plate Bypass *
C79	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	Integrator Net.
C80	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	" "
C81	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	Vert. Osc. Grid Cap
C82	.1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	" " Plate Decoup.
C83	05	600	D-3.100-20	P688-05	GT6S5		ST-6-05	TM-15	Vert. Discharge
C84	05	600	D-3.100-20	P688-05	GT6S5		ST-6-05	TM-15	Vert. Coupling
C85	470		C-4.109-2	1468-0005	5W5T5	GP2K500	MO.5-35	1FM-35	Sync. Coupling
C86	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	Hor. Sync. Coupling
C87	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	" "
C88	01	600	D-3.100-18	P688-01	GT6S1	GP2-335-01	ST-6-01	TM-11	Hor. Feedback Coupling
C89	005	600	D-3.100-4	P688-005	GT6J5	GP2M-005	ST-6-005	TM-25	" " Filter
C90	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-6-01	TM-11	DC Amp. Grid Filter
C91	1.0	200	C-3.102-4	484-1.0	GT2W1		ST-2-1M	TC-10	" " Feedback
C92	560	500	D-4.104-91						Hor. Osc. Grid Cap. ± 10%
C93	820	500	D-4.104-92						Hor. Discharge
C94	560	500	D-4.104-91						" ± 10%
C95	220		C-4.109-11	1468-00025	5W5T25	GP2K200	MO.5-325	1FM-325	" Coupling
C96	05	400	D-3.100-19	P488-05	GT4S5		ST-4-05	TM-15	" Output Screen Byp.
C97	.1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	" " Cath.
C98	035	600	D-3.100-44	P688-033					Damper Filter
C99	.15	600	D-3.100-48						" ± 10%
C100	2280	2000	4.117-3						Fixed Trimmer ± 10%
C101	500	10000	B-4.114			410-500			HV Filter
C102	5000		B-4.115-1	1467-005	1D5D5	GP2M005	MW.5-25	1FM-25	AVC Filter
C103	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM RF Fil. Bypass
C104	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM RF Screen Bypass
C105	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM RF Plate Decoup.
C106	100		C-4.109-10	1468-0001	5W5T1	GP1K100	MO.5-31	1FM-31	RF Coupling
C107	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	FM Mixer Cath. Bypass
C108	1500		D-4.108-12	1467-0015	1W5D15	GP2L1500	MW.5-215	1FM-215	RF Bypass
C109	1500		D-4.108-12	1467-0016	1W5D15	GP2L1500	MW.5-215	1FM-215	FM Conv. Plate Decoup.
C110	2.2		4.111-4			NP0K-3			FM Osc. Coupling
C111	47		C-4.109-12	1468-00005	5W5Q5	GP1K50	MO.5-45	1FM-45	" " Grid Cap
C112	10		C-4.109-16	1469-00001	5R5Q1	NP0K10	MO5.5-41	MS-41	Fixed Trimmer
C113	47		D-4.108-16	1469-00005	5R5Q5	NP0K5	MO5.5-55	MS-55	" §
C114	1500		D-4.108-12	1467-0015	1W5D15	GP2L-1500	MW.5-215	1FM-215	Osc. Plate Bypass
C115	5000		B-4.115-1	1467-005	1D5D5	GP2M.005	MW.5-25	1FM-25	" Fil.
C116	01	400	D-3.100-7	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	AVC Filter
C117	02	200	D-3.100-12	P488-02	GT4S2		ST-4-02	TM-12	" "
C118	47		C-4.109-12	1468-00005	5W5Q5	GP1K50	MO.5-45	1FM-45	Osc. Grid Cap
C119	.1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	RF Bypass
C120	05	400	D-3.100-19	P488-05	GT4S5		ST-4-05	TM-15	Conv. Screen Bypass
C121	05	400	D-3.100-19	P488-05	GT4S5		ST-4-05	TM-15	Line Filter
C122	05	400	D-3.100-19	P488-05	GT4S5		ST-4-05	TM-15	" "
C123	02	400	D-3.100-11	P488-02	GT4S2		ST-4-02	TM-12	Audio Coupling †
C124	.2	400	D-3.100-40	P488-22	GT4P2		ST-4-2	TC-2	Phase Inv. Plate Dec. †
C125	003	600	D-3.100-3	P688-003	GT6D3	GP2M003	ST-6-003	TM-23	Output Plate Bypass †
C126	003	600	D-3.100-3	P688-003	GT6D3	GP2M003	ST-6-003	TM-23	" " " " †
C127	.2	400	D-3.100-40	P488-22	GT4P2		ST-4-2	TC-2	Phase Inv. Plate Dec. †
C128	1	400	D-3.100-23	P488-1	GT4F1		ST-4-1	TM-1	RF Bypass

* Not used in models 12TZ6A-7A and 15TZ6-7.
† Used only in models 12TZ6A-7A and 15TZ6-7.
$ Not used in all models.
Ø Parallel sections to obtain desired capacity

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	INSTALLATION NOTES
R1A	1 Meg	½	C-8.218			Volume control & Sw. tapped @ 500KΩ
B	1 Meg	½				Tone control (Dual Concentric)
R2A	50000Ω	½	C-8.219-3	D11-114	AM-19-S	Contrast control
B	Shaft		Not Req.	E	KSS-3	Attach to R2A Per Instructions
R3A	20KΩ	½	C-8.217			Horizontal hold control Dual Concentric
B	2 Meg	½				Vert. hold control
R4A	100KΩ	½	C-8.219-2	D11-128	AM-49-S	Brightness control
B	Shaft		Not. Req.	E	KSS-3	Attach to R4A Per Instructions
R5A	25KΩ	½	C-8.219-4	D11-120	M-40-S	Horizontal peaking control
B	Shaft		Not Req.	A	Not Req.	Attach to R5A Per Instructions
R6A	5 Meg	½	C-8.219-1	D11-141		Exp. Vert. Size
B	Shaft		Not Req.	A		Attach to R6A Per Instructions
R7	100Ω	1	C-8.220-2	W-100	43-100	Horizontal centering control
R8	22500Ω	1	C-8.221	W-2000	43-2000	Focus control
R9	50000Ω	1	C-8.206-1	W-5000	43-5000	Vert. Linearity control
R10	50000Ω	1	C-8.206-1	W-5000	43-5000	Exp. Vert. linearity control
R11	10Ω	1	C-8.200-1	W10X5		Vert. centering control tapped @ 5Ω
R12A	5 Meg	½	C-8.219-1	D11-141		Vert. size control
B	Shaft		Not Req.	A		Attach to R12A Per Instructions
R13A	25KΩ	½	C-8.219-4	D11-120	M-40-S	Exp. Horizonal peaking control
B	Shaft		Not Req.	A	Not. Req.	Attach to R13A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES (All resistors are ± 20% unless otherwise stated.)
R14	150Ω	½			Br.-Grn.-Br. RF Grid
R15	150Ω	½			Br.-Grn.-Br. RF Grid
R16	1000Ω	½		BTS-1000	Br.-Blk.-Red Bias Network
R17	10K	½		BTS-10K	Br.-Blk.-Or. RF Coil Shunt
R18	1000Ω	½		BTS-1000	Br.-Blk.-Red RF Plate
R19	1000Ω	½		BTS-1000	Br.-Blk.-Red RF Plate
R20	5600Ω	½		BTS-5600-5%	Grn.-Blue-Red Mixer Coil Shunt 5%
R21	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mixer Grid
R22	1000Ω	½		BTS-1000	Br.-Blk.-Red Osc. Plate
R23	1000Ω	½		BTS-1000	Br.-Blk.-Red Osc. Plate
R24	100KΩ	½			Br.-Blk.-Yl. Osc. Grid
R25	100KΩ	½			Br.-Blk.-Yl. " "
R26	1000Ω	½		BTS-1000	Br.-Blk.-Red Mixer Decoupling
R27	4700Ω	½	D-7.101-45	BTS-4700	Yl.-Vi.-Red Voltage Divider
R28	22K	½	D-7.100-73	BTS-22K	Red-Red-Or. " "
R29	3300Ω	½	D-7.101-38	BTS-3300	Or.-Or.-Red " "
R30	10KΩ	½	D-7.101-59	BTS-10K	Yl.-Vi.-Or. 1st Video IF Grid
R31	82Ω	½	D-7.101-235		Gray-Red-Blk. " " " Cathode 10%
R32	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. AGC Network
R33	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red 1st Video IF Decoupling
R34	15KΩ	½	D-7.101-66		Br.-Grn.-Or. 2nd " " Grid
R35	82Ω	½	D-7.101-235		Gray-Red-Blk. " " " Cathode 10%
R36	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Decoupling
R37	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. AGC Network
R38	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. 3rd Video IF Grid
R39	82Ω	½	D-7.101-235		Gray-Red-Blk. " " " Cathode 10%
R40	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Decoupling
R41	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. AGC Network
R42	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. " "
R43	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. 4th Video IF Grid 10%
R44	10KΩ	½	D-7.101-217		Br.-Gray-Br. " " " Cathode
R45	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Decoupling
R46	100K	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. Delayed AGC Network
R47	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. AGC Load
R48	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. AGC Network
R49	4700Ω	½	L-7.101-43	BTS-4700-5%	Yl.-Vi.-Red Video Amp. Grid 5%
R50	470Ω	½	D-7.100-3	BTS-47C	Yl.-Vi.-Br. " " Cathode
R51	22KΩ	½	D-7.100-72	BTS-22K	Red-Red-Or. " " Plate 5%
R52	150KΩ	1	D-7.102-116	BTA-150K	Br.-Grn.-Yl. 4th Video IF Screen Decoupling
R53	4700Ω	1	D-7.102-50	BTA-4700-5%	Yl.-Vi.-Red " " Plate 5%
R54	47KΩ	½	D-7.101-87	BTS-47K	Yl.-Vi.-Or. Picture Tube Grid
R55	15KΩ	½	D-7.101-56	BTS-15K	Br.-Grn.-Yl. Sync. Sep. Plate
R56	68KΩ	½	D-101-94	BTS-65K	Blue-Gray-Or. Voltage Divider
R57	4700Ω	½	D-7.101-45	BTS-4700	Yl.-Vi.-Red " "
R58	150KΩ	½	D-7.100-108	BTS-150K	Br.-Grn.-Yl. Sync. Sep. Cathode
R59	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. Sync. Amp. Grid
R60	22KΩ	½	D-7.100-73	BTS-22K	Red-Ref-Or. " " Plate
R61	4700Ω	½	D-7.101-45	BTS-4700	Yl.-Vi.-Red Voltage Divider See Note 2
R62	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " "
R63	47KΩ	½	D-7.100-87	BTS-47K	Yl.-Vi.-Or. " "
R64	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " "
R65	1000Ω	½	D-7.100-17	BTS-1000	Br.-Blk.-Red AGC Anode Decoupling
R66	1 Meg.	½	D-7.100-143		Br.-Blk.-Grn. 1st Sound IF Grid
R67	100Ω	½	D-7.101-226		Br.-Blk.-Br. " " " Cathode
R68	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Screen Decoupling
R69	470KΩ	½	D-7.100-129		Yl.-Vi.-Yl. 2nd Sound IF Grid
R70	68Ω	½	D-7.100-199		Blue-Gray-Blk. " " " Cathode
R71	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Screen Decoupling
R72	47KΩ	½	L-7.100-87	BTS-47K	Yl.-Vi.-Or. Diode Filter
R73	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. " Load
R74	47K	½	D-7.100-87	BTS-47K	Yl.-Vi.-Or. Limiter Grid
R75	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
R76	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn. " "
R77	68KΩ	½	L-101-94	BTS-68K	Blue-Gray-Or. Limiter Screen Decoupling
R78	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " Bleeder
R79	47K	1	D-7.101-87	BTS-47K	Yl.-Vi.-Or. Limiter Plate Decoupling 10%
R80	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. Disc. Load
R81	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " "
R82	47KΩ	½	D-7.100-87	BTS-47K	Yl.-Vi.-Or. De-empasis
R83	10 Meg.	½	D-7.100-185	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
R84	220KΩ	½	D-7.101-115	BTS-220K	Red-Red-Yl. " Plate
R85	15KΩ	½	D-7.101-56	BTS-15K	Br.-Grn.-Or. Tone Compensation
R86	470KΩ	½	D-7.100-129	BTS-470K	Yl.-Vi.-Yl. Output Grid
R87	560Ω	1	D-7.102-13	BTA-560	Grn.-Blue-Br. " " Cathode 10%
R88	7500Ω	25	B-6.216		Bleeder
R89	22500Ω	7	B-6.215-2	AB-2250	Filter
R90	22KΩ	½	L-7.100-73	BTS-22K	Red-Red-Or. Integrator Net.
R91	4700Ω	½	L-7.101-45	BTS-4700	Yl.-Vi.-Red " "
R92	2.2 Meg.	½	D-7.100-157	BTS-2.2 Meg.	Red-Red-Grn. Vert. Blocking Osc. Grid
R93	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " " Plate Decoup.
R94	220K	½	D-7.101-115	BTS-220K	Red-Red-Yl. " " Discharge Plate
R95	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red Vert. Output Cathode
R96	6.8 Meg.	½	D-7.100-178	BTS-6.8 Meg.	Blue-Gray-Grn. Vert. Output Grid
R97	180Ω	2	D-7.100-217		Br.-Gray-Br. " " Cathode
R98	11KΩ	2	D-7.100-1350		Br.-Br.-Or. Filter 5%
R99	47KΩ	½	D-7.100-87	BTS-47K	Yl.-Vi.-Or. " "
R100	470Ω	7	B-6.215-5	AB-500	Series Focus Control 10%
R101	680Ω	10	B-6.211-3	AB-700	Focus Coil Shunt See Note 1 10%
R102	47KΩ	½	D-7.100-87	BTS-47K	Yl.-Vi.-Or. Phase Inv. Grid
R103	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Plate
R104	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red " " " Cathode
R105	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. Sweep Feedback Network
R106	100KΩ	½	D-7.101-101	BTS-100k	Br.-Blk.-Yl. Phase Det. Load
R107	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " "
R108	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. Sweep Feedback Network
R109	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. DC Amp. Plate Decoupling
R110	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. " " Plate
R111	10KΩ	½	D-7.101-59	BTS-10K	Br.-Blk.-Or. Phase Shifter
R112	33KΩ	½	D-7.100-79	BTS-33K	Or.-Or.-Or. Horiz. Osc. Grid See Note 3 10%
R113	33KΩ	½	D-7.100-79	BTS-33K	Or.-Or.-Or. " " 10%
R114	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl. Horiz. Blocking Osc. Plate Decoup
R115	330KΩ	½	D-7.101-125	BTS-330K	Or.-Or.-Yl. " " Discharge Plate
R116	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Flk.-Grn. " " Output Grid
R117	47Ω	½	D-7.100-197

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES		
	RESISTANCE	WATTS	GAROD PART No.	IRC PART No.			
R121	3.3Ω	1	C-6.212-1	BW-1-3.3	Or.-Or.-Gold	Filament Dropping	
R122	470KΩ	1	D-7.102-137		Yl.-Vl.-Yl.	HV Filter	
R123	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn	AVC Filter	
R124	10KΩ	1	D-7.102-66	BTA-10K	Br.-Blk.-Or.	FM RF Screen	
R125	470Ω	½	D-7.100-3	BTS-470	Yl.-Vl.-Br.	" Mixer Cathode	
R126	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red	" Mixer Plate Decoupling	
R127	22KΩ	½	D-7.100-73	BTS-22K	Red-Red-Or.	" Osc. Grid	
R128	2200Ω	½	D-7.101-31	BTS-2200	Red-Red-Red	" " Plate	
R129	1 Meg.	½	D-7.100-143	BTS-1 Meg.	Br.-Blk.-Grn.	AVC Network	
R130	22KΩ	½	D-7.100-73	BTS-22K	Red-Red-Or.	AM Osc. Grid	
R131	22KΩ	1	D-7.102-81	BTA-22K	Red-Red-Or.	" " Anode	
R132	17500Ω	25	B-6.216			Bleeder	
R133	650Ω	7	B-6.215-6			Voltage Dropping	
R134	10KΩ	25	B-6.218	DG-10K		Damper Filter	
R135	3300Ω	½	D-7.101-38	BTS-3300	Or.-Or.-Red	Phase Inv. Cathode	10%
R136	12KΩ	½	D-7.100-62	BTS-12K	Br.-Red-Or.	" " Grid	
R137	470KΩ	½	D-7.100-129	BTS-470K	Yl.-Vl.-Yl.	Output Grid	
R138	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl.	Phase Inv. Plate	
R139	100KΩ	½	D-7.101-101	BTS-100K	Br.-Blk.-Yl.	" " " Decoupling	
R140	470KΩ	½	D-7.100-129	BTS-470K	Yl. -Vl.-Yl.	Output Grid	
R141	220Ω	2	D-7.103-59	BW-2-220	Red-Red-Br.	" Cathode	
R142	650Ω	7	B-6.215-6	AB-700		Filter	

Note 1. Item R103 not used on models employing 12JP4 or 15AP4. When 12QP4 or 12KP4 tube is used R103 is 1800Ω IRC replacement AB-1800
Note 2. Item R63 was 6800Ω in early production. IRC replacement BTS-6800.
Note 3. Item R114 was 25KΩ in early production.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	117VAC @ 2.4A	820VCT @ .250ADC	430VCT @ .092ADC	5VAC @ 2A	C-9.222			
		SEC. 4	SEC. 5	SEC. 6				
		5VAC @ 2A	5VAC @ 3A	6.6VAC @ 9.3A				
T2	117VAC @ .65A	690VCT @ .089ADC	5VAC @ 2A	6.8VAC @ 1.3A	C-9201‡	P-6012 ♦	PH-90	P-2952 ♦

‡ Used in models 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.
♦ Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
T3	3.25Ω	7.5Ω	C-9.212	A-8120	TBO-1	A-4002	Hor. Block Osc. Trans.
T4	180Ω	1800Ω	C-9.213	A-8121	TFB-1	A-4000	Vert. " " "
T5	410ΩTAP @ 170Ω		C-9.220	A-8117			Hor. Output Trans.
		SEC. 1					
		8.7Ω TAP .8.5Ω					
		SEC. 2					
		OΩ					
T6	500Ω	4.5Ω	C-9.221*	A-8115	TSO-1	A-3035	Vert. Output XFMR.
T7A	15Ω		C-9.209	DY-1			Hor. Deflection Yoke
B	60Ω						Vert. " "
T8	390Ω		C-9.211	FC-10			Focus Coil

* Alternate Part Number C-9.228

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T9A	7000Ω CT	4Ω	575Ω	.3Ω	C-9.225 ♦	A-3823	RO-303	A-2901	
B	9.2KΩ CT	7.2Ω	365Ω CT	.5Ω	C-9.226♯	A-3824	RO-303	A-3027 ♦	♦ Drill new mounting holes.

♦ Used in models 10TZ1, 10TZ2, 10TZ3, 10TZ4, 10TZ5, 12TZ1, 12TZ2, 12TZ3, 12TZ4, 12TZ5.
♯ Used in models 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GAROD PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-110		
SP1A	PM	4Ω	C-30.321*	Model P6-V	6A21	Used in models 10TZ1, 10TZ2, 10TZ3, 12TZ1, 12TZ2, 12TZ3.
B	PM		C-30.320♯			Used in models 10TZ4, 5, 12TZ4, 5.
C	PM	3.3Ω	C-30.322‡			Matched pair. Used in models 12TZ6A,
D	PM	3.9Ω	C-30.323‡			12TZ7A, 15TZ6, 15TZ7.
	CONE DIA.	V. C. DIA.				
SP2A	6"	9/16"				
B	10"					
C	10"					
D	10"					

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	GAROD PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
L1	.250A	90Ω	4H	C-9.224	C-2325		C-2991	
L2	.092A	60Ω	4H	C-9.223	C-2304		C-2991	

COILS (RF-IF)

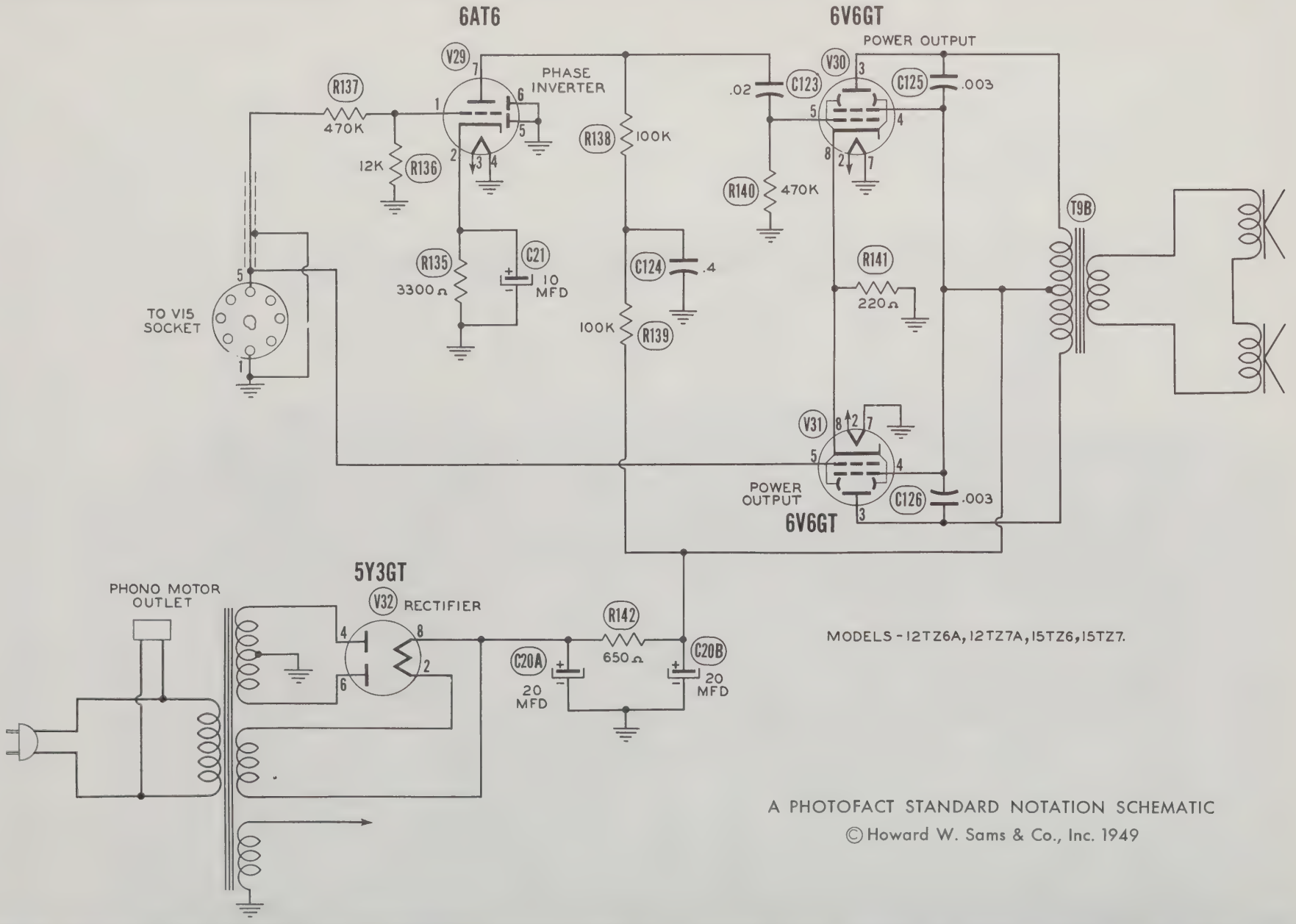
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L3	Interference Trap Coil	0Ω				Part of Tuner Assy. Part # D-36.128
L4	Interference Trap Coil	0Ω				" " " " " "
L5	Ant. Input	.2ΩCT				" " " " " "
L6	RF Plate Low Band	0Ω				" " " " " "
L7	RF Plate High Band	0Ω				" " " " " "
L8	Mixer Grid Coil, Low Band	0Ω				" " " " " "
L9	Mixer Grid Coil, High Band	0Ω				" " " " " "
L10	Osc. Coil Low Band	0Ω				" " " " " "
L11	Osc. Coil High Band	0Ω				" " " " " "
L12	1st Video IF	0Ω	0Ω			" " " " " "
L13	2nd Video IF	.2Ω		C-1.475-1		
L14	3rd Video IF	.2Ω		C-1.475-1		
L15	4th Video IF	.2Ω		C-1.475-1		
L16	RF Choke			C-1.465-7		
L17	5th Video IF	.8Ω	.3Ω	C-1.476		
L18	Peaking	5Ω		C-1.465-1		Inductance-128 Microhenries (Red dot)
L19	Peaking	8.5Ω		C-1.465-8		" -290 " (Red-Green)
L20	Peaking	10Ω		C-1.465-9		" -440 " (Yellow-Green)
L21	2nd Sound IF	.2Ω	.2Ω	C-1.477-2		
L22	3rd Sound IF	.2Ω	.2Ω	C-1.477-2		
L23	Sound Disc. XFMR	.2Ω	.2Ω	C-1.461		
L24	Horiz. Width Control	.3Ω		B-1.458		
L25	Horiz. Linearity Control	34Ω		B-1.459		
L26	FM Dipole Ant.	0Ω		C-20.219		
L27	FM Ant.	0Ω	0Ω	C-1.480		
L28	RF Plate Chk.	1Ω				
L29	FM RF Coil	0Ω		C-1.481		
L30	FM Osc.Coil	0Ω		C-1.481		
L31	RF Choke	1Ω				
L32	Fil. Choke	.1Ω		C-1.474		
L33	Am Loop Ant	1.2Ω		C-1.483		
L34	AM Osc.Coil	5.5Ω		C-1.436-2	14-1060	
L35	1st Sound IF	.2Ω	.2Ω	C-1.477-2		
L36	1st AM IF	16Ω	15Ω	C-1.445-3	16-6678	
L37	2nd AM IF	16Ω	15Ω	C-1.445-3	16-6678	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8V	0.25A	Blue			Type #44
M2	Bayonet	6-8V	0.25A	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	GAROD PART No.	NOTES
M3	Tuner Assembly	P-36.128	
M4	Band Switch	B-11.220	
M5	Push Button Switch	11.222	
M6	Relay	11.223	4PDT 6VAC Relay
M7	Fuse		Type 3AG, 5 Amp.
M8	Fuse		Type AGC. .12E Amp.
M9	Tuning Gang	C-2.219	AM-FM, two section, AM-(16-497MMF) W/O/T, (33-189MMF) W/T
M10	Socket	C-24.225-1	Picture tube
M11	Ion Trap	36.126	Do not use when 10FP4, 12JP4, 12KP4, 15AP4, Picture Tubes are employed.
	Speaker Plug	B-24.218	
	Ant. Terminal Strip	B-23.212	
	Cabinet	E-12.290	Models-12TZ6A
	Cabinet	E-12.293	Table Models,-10TZ1, 10TZ2, 12TZ1, and 12TZ2.
	Cabinet	E-12.294	Console Models,-10TZ4, 10TZ5, 12TZ4, and 12TZ5
	Cabinet	E-12.302	Models-10TZ3, and 12TZ3.
	Knobs	B-13.103	Tuning, Contrast and Brightness Controls
	Knobs	B-13.116	Band Switch
	Knob Plate	C-13.165	
	Knobs	B-13.167	Volume, Horiz. hold and fine tuning
	Knobs	B-13.168	Tone, and Vert. Hold
	Channel Indicator	26.562	



MODELS - 12TZ6A, 12TZ7A, 15TZ6, 15TZ7.

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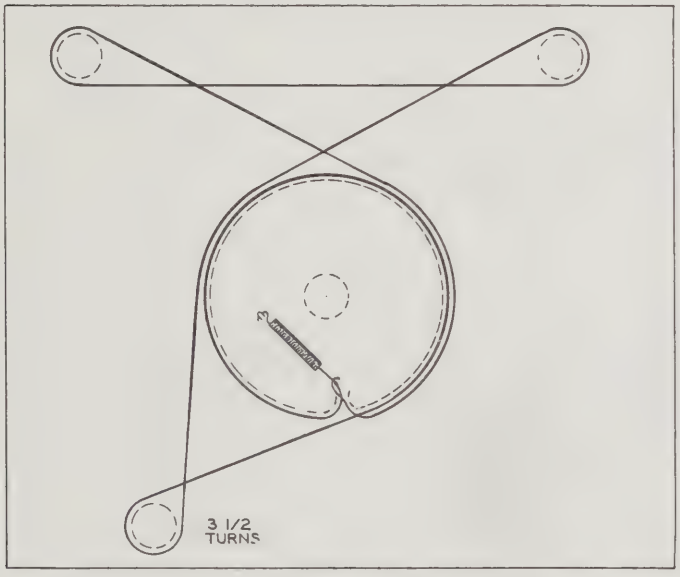
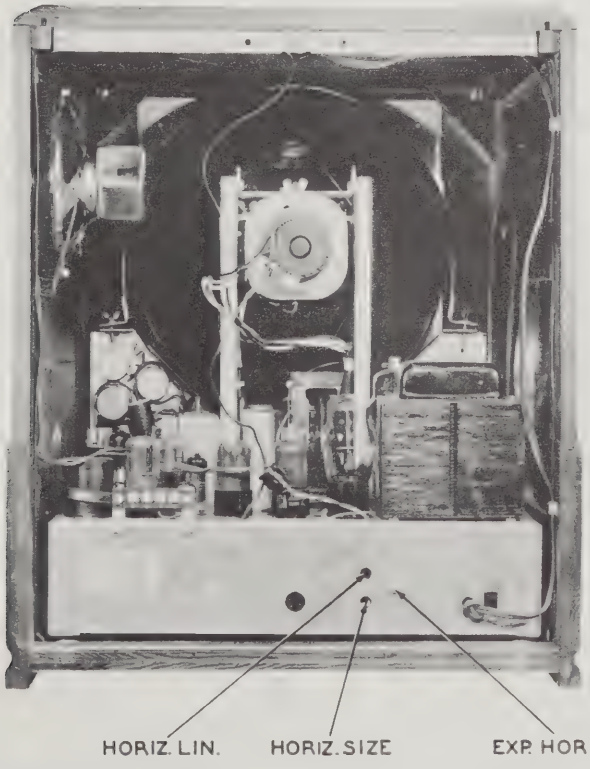
DISASSEMBLY INSTRUCTIONS

MODEL 12TZ1

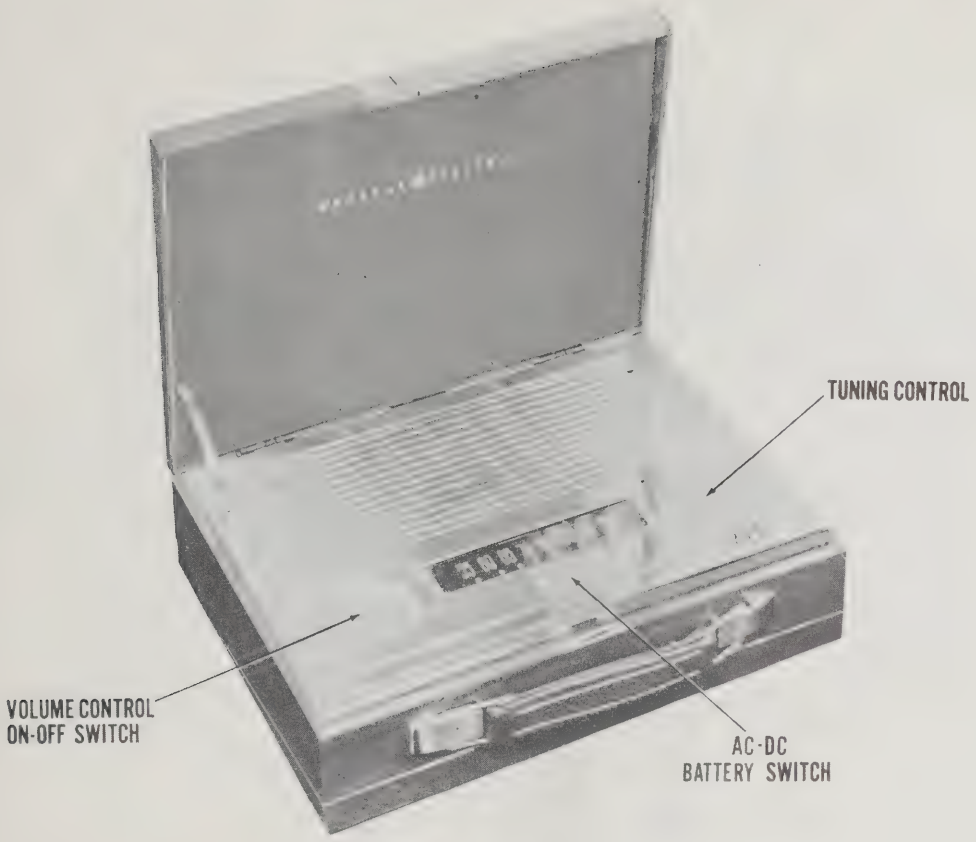
1. Remove ten push-on type control knobs.
2. Remove three screws holding back cover. Remove back cover.
3. Disconnect speaker plug and FM Antenna leads.
4. Remove two phillips head screws holding picture tube safety glass. Remove safety glass.
5. Loosen wing head screws holding picture tube at front of tube.
6. Remove picture tube plug and Ion trap at rear of picture tube.
7. Remove picture tube by pulling it straight out front of cabinet.
8. Remove six metal screws holding chassis. Remove chassis from cabinet.

DIAL CORD STRINGING





CABINET-REAR VIEW



GENERAL ELECTRIC MODEL 145

TRADE NAME	General Electric, Model 145
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna.
TUBES (FOUR)	Types 1R5 Converter, 1T4 IF Amp., 1S5 DET.-AVC-AF, 3V4 Power Output.
POWER SUPPLY	105-120 Volts AC-DC or 1.5 Volts "A" Supply and 67.5 Volts "B" Supply.
RATING	.16 Amp. @ 117 Volts AC or 220MA @ 1.5 Volts DC and 9.6MA @ 67.5 Volts DC.
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer, turn tuning cap. fully closed and set left hand edge of dial pointer saddle 13/16" from left hand edge of dial backplate.

Use isolation transformer if available. If not connect a .1 MFD cap. in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to pin 6(Grid) 1T4(V2). Low side to B-.	455KC	550KC	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200 MMF to reduce hum modulation.
2	.05 MFD	High side to pin 6(Grid)1R5(V1). Low side to B-.	"	"	"	A3,A4	Adjust for maximum output.
3		Loop.	1620KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	Tune for maximum signal.	"	A6	Reinstall receiver in cabinet and adjust A6 for maximum output.

GENERAL ELECTRIC
MODEL 145

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1T4	1T4	6AR	
V3	DET.-AVC-AF	1S5	1S5	6AU	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELEC. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	RCE-051		BRD3315		M-2X40-		Red Filter.
B	40	150					150		Filter.
C2	90	10	RCE-052	PRS 25/100	BRH121		M-100-12	UHC-112	Output Cathode Bypass.
C3	47	500	UCU-020	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Grid Cap.
C4	.01	400	RCC-075			GP2-335-01	TST-6-01	68P8	Tuning Cap. Isolation.
C5	.1	150	RCC-077				TST-2-1	68P17	Converter Cath. Bypass.
C6	.01	400	RCC-075			GP2-335-01	TST-6-01	68P8	Converter Decoupling.
C7	.05	400	RCC-078	P488-05	GT4S5		ST-4-05	72P1	Line Isolation.
C8	.1	150	RCC-077				TST-2-1	68P17	AVC Filter.
C9	.05	400	RCC-078	P488-05	GT4S5		ST-4-05	68P10	" "
C10A	2000		RCW-3015			GP2M-002			Audio Coupling.
B	330					GP2K-300			Diode Filter.
C	220					GP2K-250			AF Plate Bypass.
D	4000					GP2M-005			Audio Coupling.
E	5000					GP2M-005			AF Screen Bypass.
C11	.1	150	RCC-077				TST-2-1	68P17	AF Plate Decoupling.
C12	2000		RCW-3018			GP2M-002			Output Plate Bypass.
C13	.05	400	UCC-028	P488-05	GT4S5		ST-4-05	68P10	Line Filter.

CONTROLS

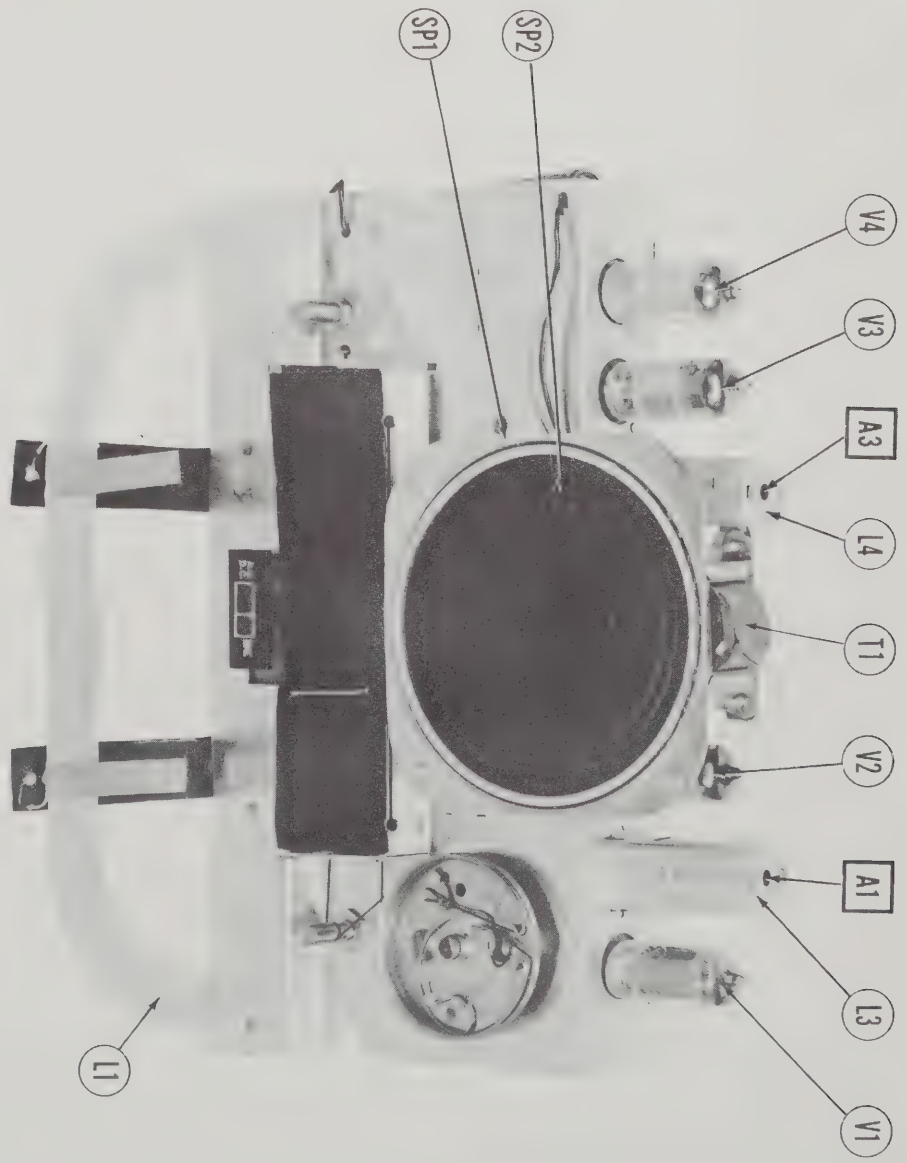
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN.ELEC. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	KRC-094		15/16-60-Z	Volume Control.
B	Shaft		Not Req.		SW-2	Attached at factory.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl.	Oscillator Grid.
R3	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red.	Converter Filament.
R4	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
R5	2.2 Meg.	½	URD-129	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
R6	820Ω	½	URD-047	BTS-820	Gray-Red-Br.	IF Filament.
R7	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid.
R8	3.9 Meg.	½	URD-135	BTS-3.9 Meg.	Or.-White-Grn.	AF Screen.
R9	1 Meg.	½	URD-121	BTS-1 Meg.	Br.-Blk.-Grn.	AF Plate.
R10	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or.	AF Plate Decoupling.
R11	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn.	Output Grid.
R12	33KΩ	½	URD-081	BTS-33K	Or.-Or.-Or.	Bias Network.
R13	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br.	Bias Network.
R14	3300Ω	½	URD-061	BTS-3300	Or.-Or.-Red.	Converter Decoupling.
R15	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl.	Line Isolation.
R16	1320Ω	10	RRW-031	ABA-1450 #		Filter-Voltage Dropping.
R17	1200Ω	10	RRW-032	AB-1200		" " "
R18	33Ω	3	RRW-030			Surge Limiter.

Set Slider at 1320Ω.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GENERAL ELECTRIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	10.7KΩ	3.3Ω	720Ω	.3Ω	RTO-057	A-3879†	RO-16†	A-2932†	† Bend mounting frame over speaker magnet frame; drill or enlarge holes for 2" mounting.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GENERAL ELECTRIC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V.C. IMP.				
SP1	PM	3.3Ω	UOP-489	ST-113 * MOD P4-X	4A07 *	* Enlarge chassis cutout and re-mount output transformer.
	CONE DIA.	V.C. DIA.				
SP2	4"	9/16"				

R F COILS

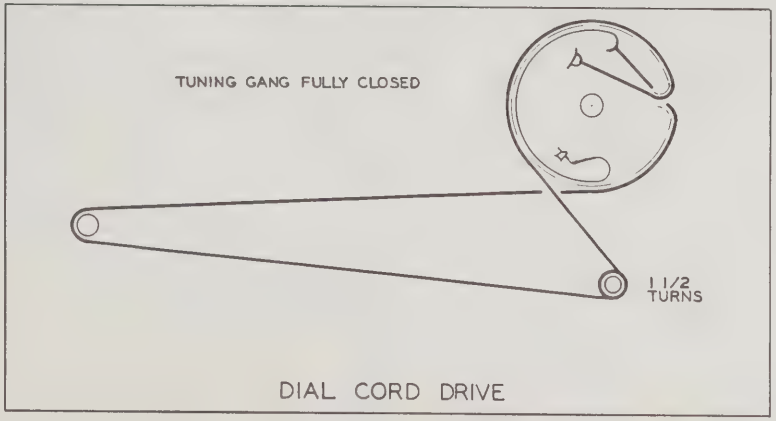
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GENERAL ELECTRIC PART No.	MEISSNER PART No.	
L1	Loop Ant.	4Ω		RLL-037		
L2	Osc. Coil.	2Ω	8Ω	RLC-080		
L3	Input IF	21Ω	22Ω	RTL-052	16-6668	
L4	Output IF	21Ω	22Ω	RTL-052	16-6669	

BATTERIES

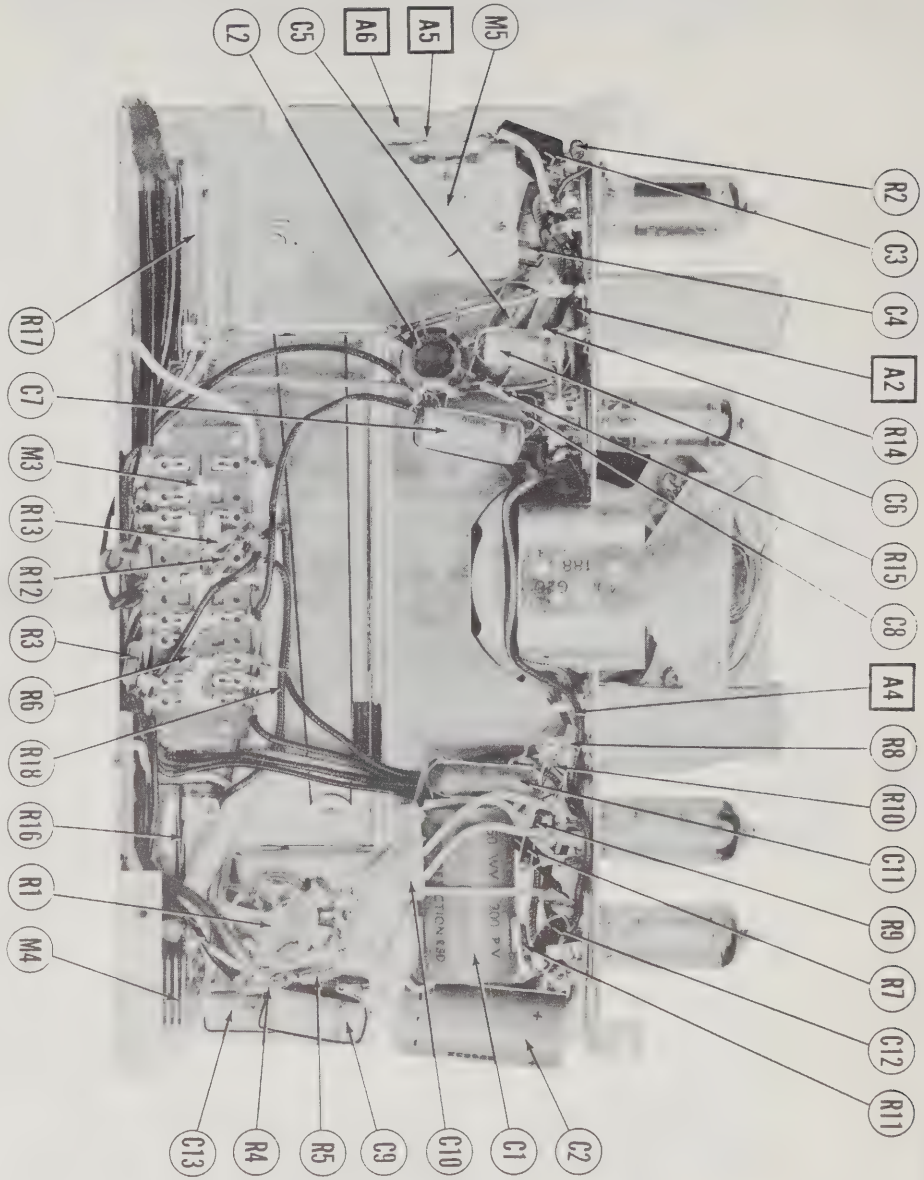
ITEM No.	VOLTAGE	GENERAL ELECTRIC PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V "A"		950			2			2 used in parallel.
M2	67.5V "B"			467			XX45		

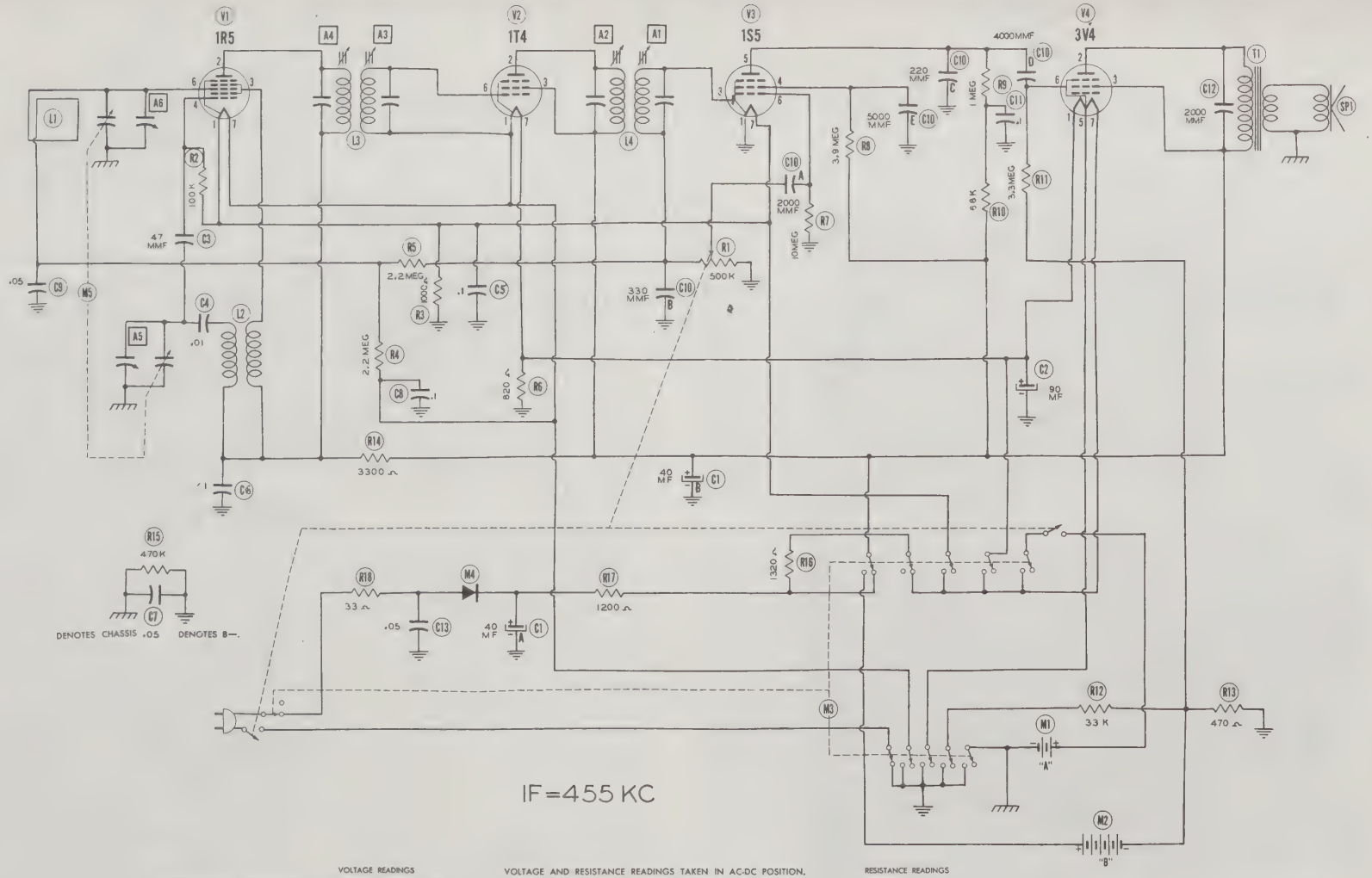
MISCELLANEOUS

ITEM No.	PART NAME	GENERAL ELECTRIC PART No.	NOTES
M3	Switch	RSW-061	AC-DC / Battery.
M4	Rectifier	REX-005	Selenium.
M5	2 Gang Var. Cap.	RCT-035	(18-327MMF, 20-140MMF).
	Knob	RDK-149	
	Dial Pointer	RDP-044	
	Dial Scale	RDS-090	



CHASSIS—BOTTOM VIEW





IF=455 KC

VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	1.5VDC	55VDC	55VDC	§-14VDC	1.2VDC	.2VDC	2.5VDC
V2	1T4	2.5VDC	65VDC	65VDC	0V	2.5VDC	2.5VDC	2.6VDC
V3	1S5	0V	60VDC	-.1VDC	3.2VDC	12.5VDC	0V	1.2VDC
V4	3V4	3.6VDC	68VDC	68VDC	0V	9VDC	0V	6VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†4.5KΩ	†4.5KΩ	100KΩ	*	1.2 Meg.	*
V2	1T4	*	†1200Ω	†1200Ω	0Ω	*	40Ω	*
V3	1S5	*	50KΩ	400KΩ	4 Meg.	†1 Meg.	10 Meg.	*
V4	3V4	*	†1900Ω	†1900Ω	40KΩ	*	3.3 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† Measured from junction of M2 and R17.

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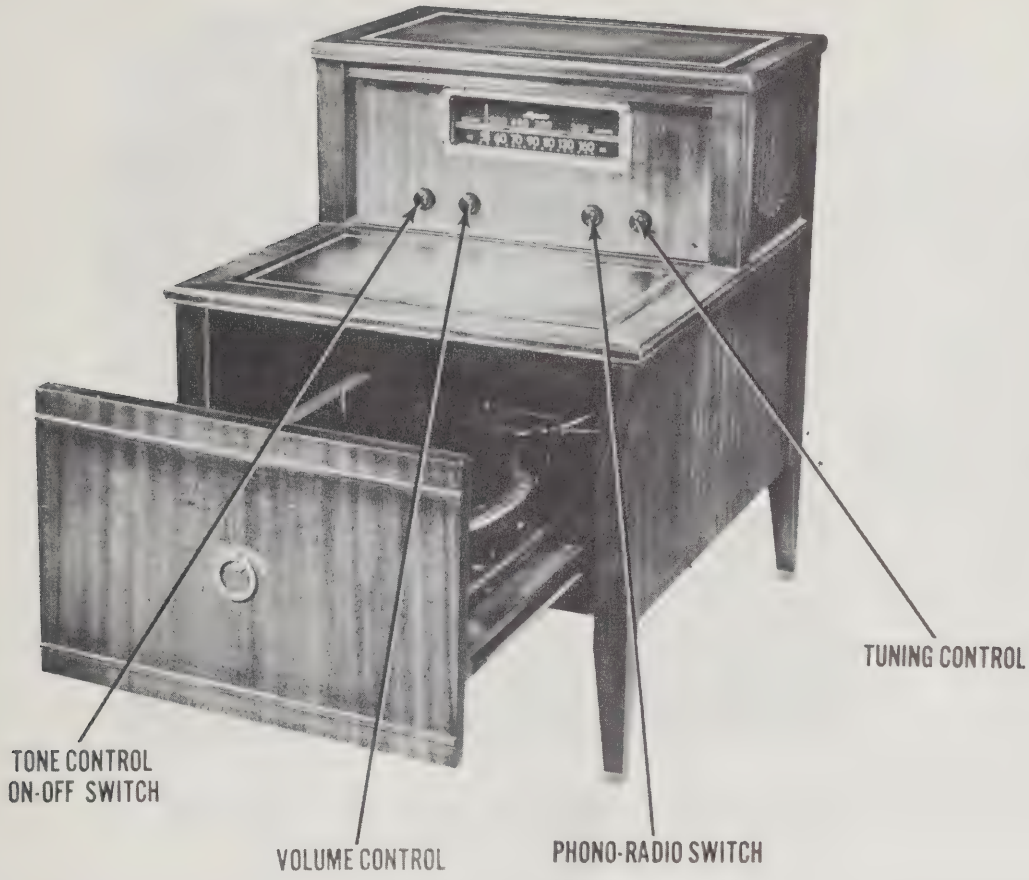
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



MAJESTIC MODEL 7JL866

TRADE NAME	Majestic, Model 7JL866 (Ch. 7625A)
MANUFACTURER	Majestic Radio and Television Corp., Elgin, Illinois
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna.
TUBES (SEVEN)	Types 6SA7 Mixer, 6J5 Oscillator, 6SK7 1st IF Amp., 6H6 DET-AVC, 6SG7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .45 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 8 (Grid) of 6SA7. Low side to chassis.	455KC	Tuning Cap fully closed.	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.		Loop	1500KC	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust of maximum output.
3.		"	"	Tune for maximum output.	"	A6	Adjust for maximum output.

MAJESTIC
MODEL 7JL866 (Ch. 7C25A)

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PARTS LIST AND DESCRIPTIONS

MAJESTIC
MODEL 7JL866

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Mixer	6SA7	6SA7	8R	
V2	Oscillator	6J5	6J5	6Q	
V3	1st IF Amp.	6SK7	6SK7	8N	
V4	Detector-AVC	6H6	6H6	7Q	
V5	AF Amp.	6SQ7	6SQ7	8Q	
V6	Power Output	6V6GT	6V6GT	7AC	
V7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	400	19-26	AF22J4A*	UP15D-		DY-312	EL-322	■ Filter
C1B	10	400		PRS450/20	145*				▲ Filter
C1C	20	25			BR202A				Output Cath. Bypass
C2	.05	600	017-8	P688-05	GT6S5		ST-6-05	TM-15	Decoupling
C3	.05	200	015-8	P288-05	GT2S5		ST-4-05	TM-15	AVC Filter
C4	.1	200	015-9	P288-1	GT2P1		ST-2-1	TM-1	IF Cath. Bypass
C5	220	500	020-53	1468-0002	5W5T2	GP2K-250	MO.5-32	1FM-32	Diode Filter
C6	.01	400	015-5	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C7	220	500	020-53	1468-0002	5W5T2	GP2K-250	MO.5-32	1FM-32	AF Plate Bypass
C8	.01	400	015-5	P488-01	GT4S1	GP2-335-01	ST-4-01	TM-11	Audio Coupling
C9	.003	200	015-3	P688-003	GT6D3	GP2M-003	ST-6-003	TM-23	Tone Compensation
C10	.005	600	017-4	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Output Plate Bypass

* Parallel sections to obtain desired capacity.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	500KΩ	½	13-19	D13-133	AM-60-Z	Volume control
B	Shaft		Not. Req.	E	KSS-3	Attach to R1A Per Instructions
R2A	200KΩ	½	14-6	D13-130	AM-64-Z	Tone control
B	Shaft		Not. Req.	E	KSS-3	Attach to R2A Per Instructions
C	Switch		" "	41	SW-A	" " " " "

RESISTORS

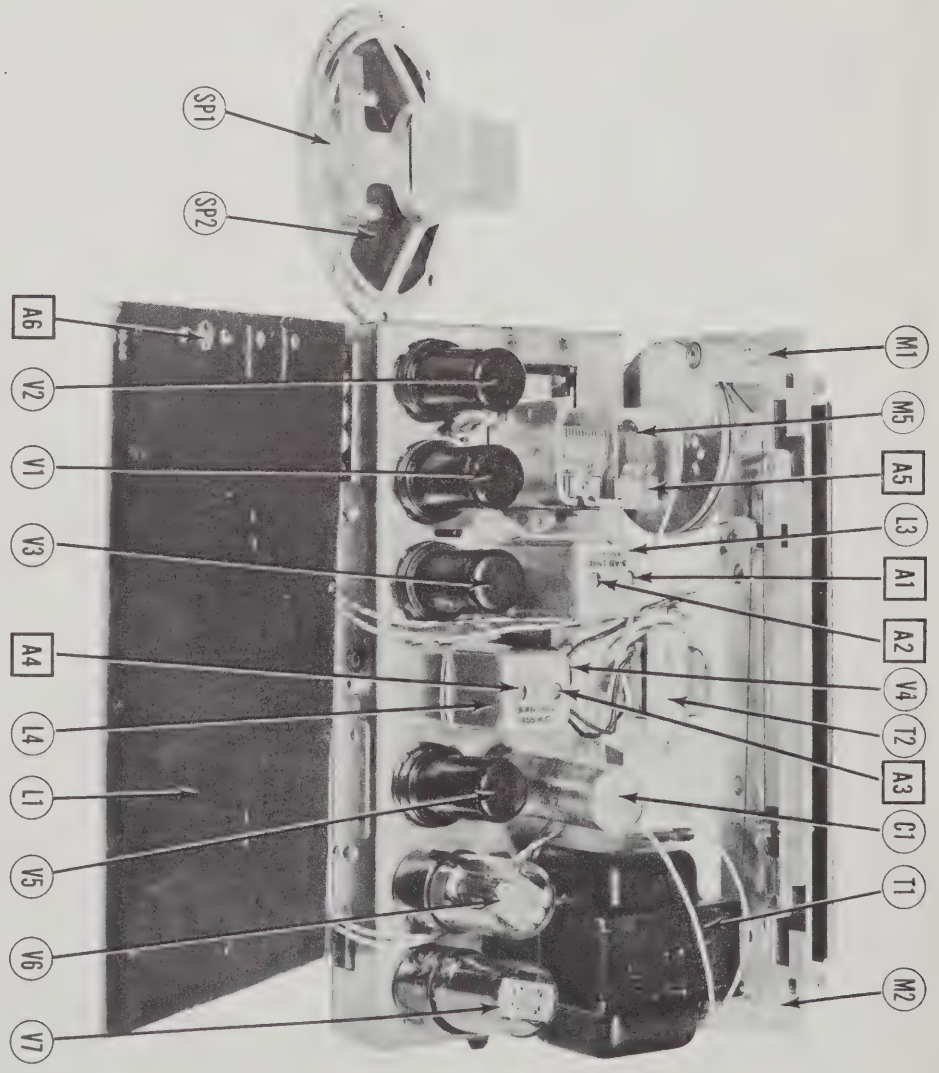
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES	
R3	22KΩ	½	01-143	BTS-22K	Red-Red-Or.	Osc. Grid
R4	200Ω	½	01-59	BW-½-220	Red-Red-Br.	IF Cathode
R5	22KΩ	1	03-143	BTA-22K	Red-Red-Or.	" Screen
R6	3.3 Meg.	½	01-234	BTS-3.3 Meg.	Or.-Or.-Grn.	AVC Network
R7	47KΩ	½	01-157	BTS-47K	Yl.-Vi.-Or.	Diode RF Filter
R8	10 Meg.	½	01-255	BTS-10 Meg.	Br.-Blk.-Blue	AF Grid
R9	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl.	" Plate
R10	470KΩ	½	01-199	BTS-470K	Yl.-Vi.-Yl.	Output Grid
R11	330Ω	1	03-65	BTA-330	Or.-Or.-Br.	" Cathode
R12	1000Ω	1	03-87	BTA-1000	Br.-Blk.-Red	Filter

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MAJESTIC PART No.	STANCOR PART No.	CHICAGO PART No	MERIT PART No.
T1	117VAC @.45A	540VAC CT .08ADC	5VAC 2A	6.4V 2.0A	2-16-C	P-6119†	PH-70B-1#	P-3150#

† Mount vertically with universal mounting brackets.
# Use series resitor to reduce plate voltage.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5500Ω	3.3Ω	340Ω	.6Ω	2-44	A-3877	RO-302	4-2930	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MAJESTIC PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3.3Ω	22-26	MOD.F5-X	5A09	
	CONE DIA.	V. C. DIA.				
SP2	4 1/2"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	
L1	Loop Ant.	0Ω	1.2Ω	S-1362R		
L2	Osc. Coil	5.5Ω		3-158	14-1060‡	‡ Add 50MMF Cap. from high side of tuning cap. to Osc. grid.
L3	1st IF Trans			3-159	16-6666	
L4	2nd IF Trans			3-160	16-6667	

DIAL LIGHTS

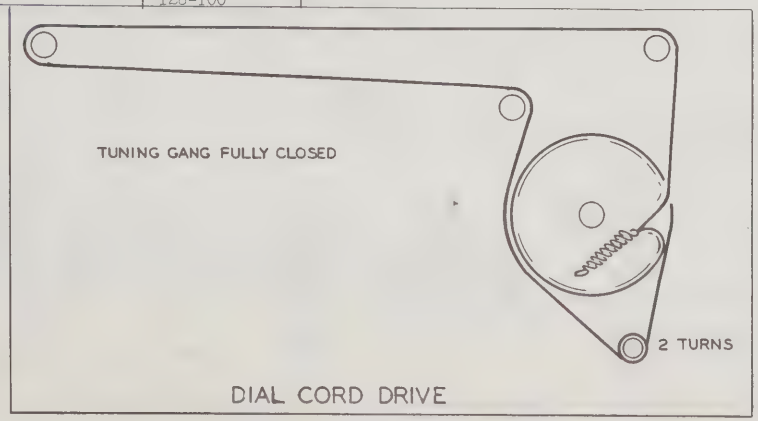
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MAJESTIC PART No.		
M1	Bayonet	6-8V	0.25A	Blue			Type #44
M2	Bayonet	6-8V	0.25A	Blue			Type #44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	MAJESTIC PART No.	ASTATIC PART No.	
M3		LT3-M	

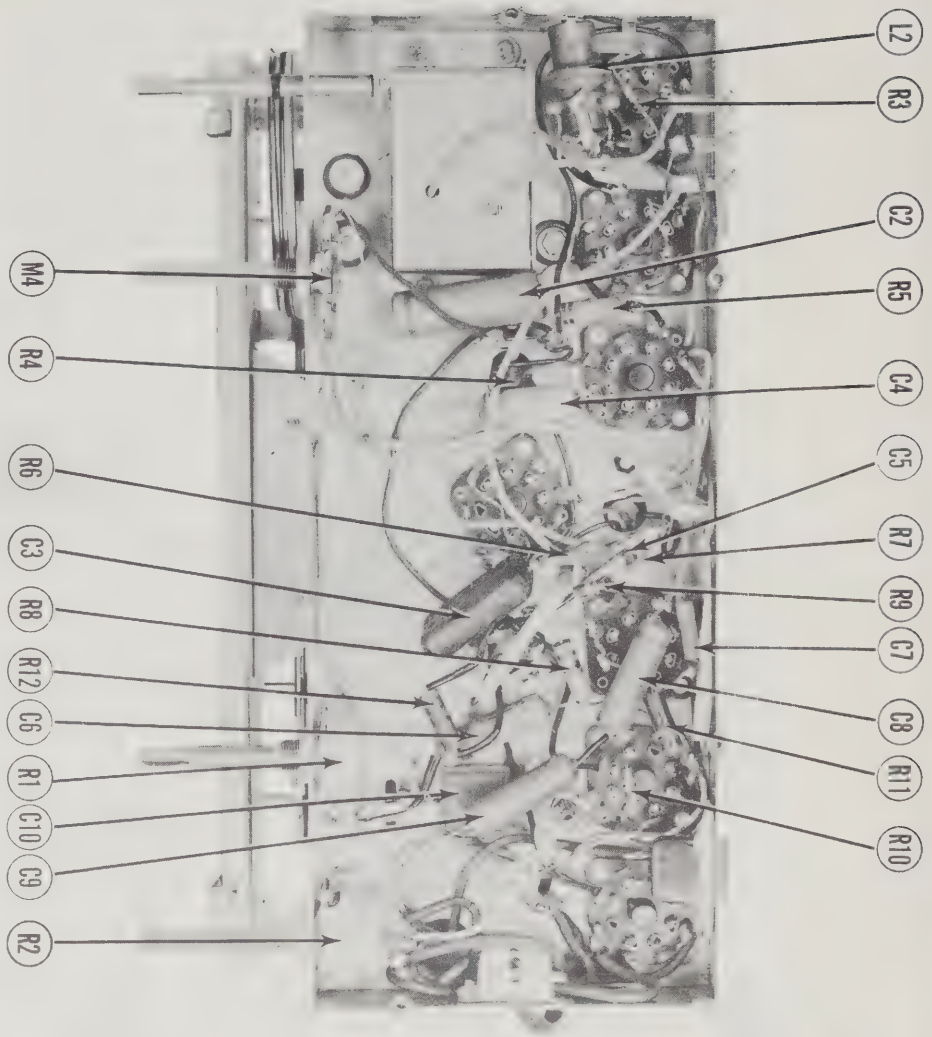
MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M4	Switch	11-52	Radio-Phono
M5	2 Gang Var. Cap.	7-28	(21-459MMF, 28-192MMF)
	Dial Scale	117-113	Glass
	Dial Pointer	135-8	
	Cabinet	115-66	
	Knob	128-100	

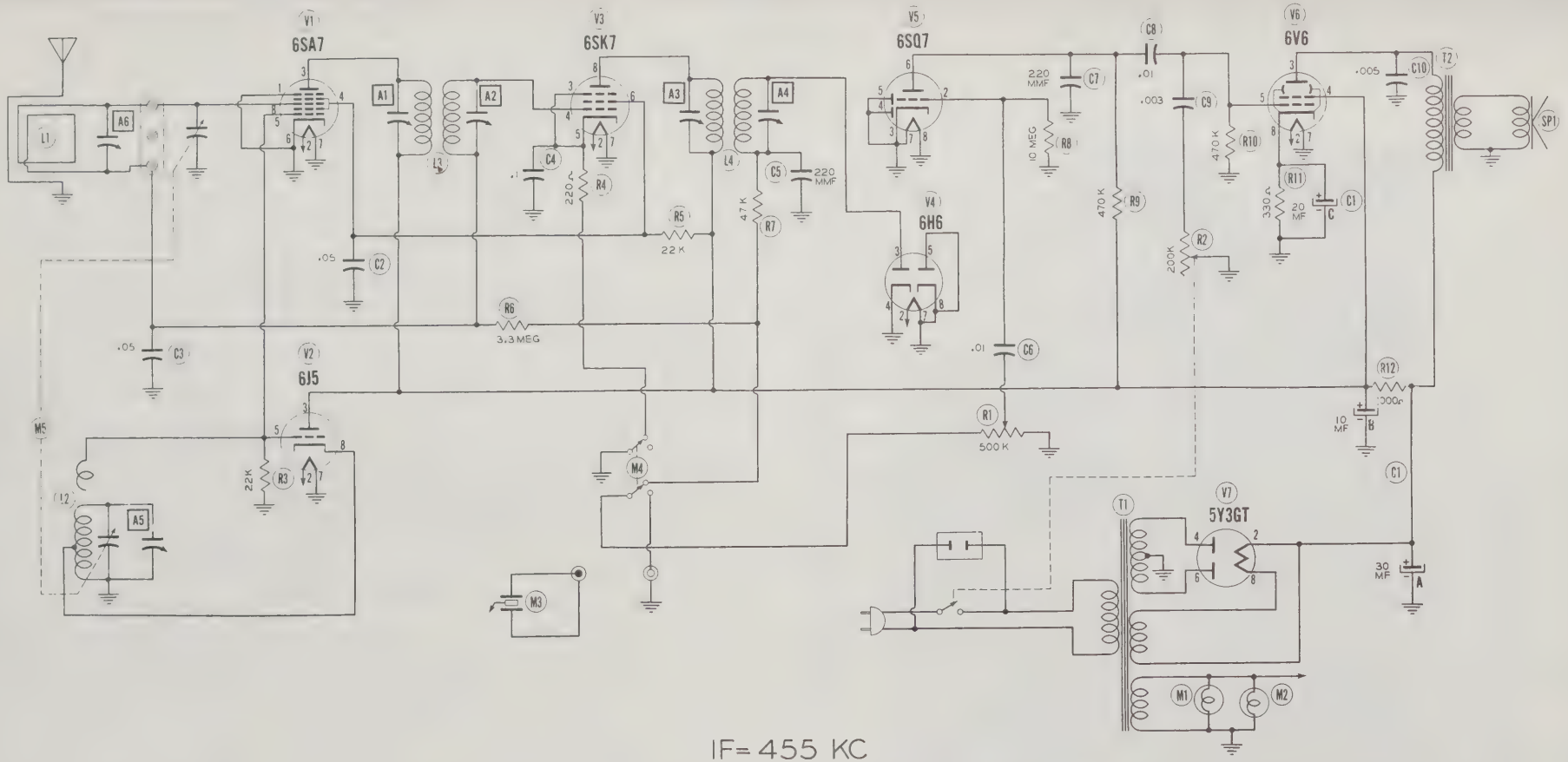


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



MAJESTIC MODEL 7JL866



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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SA7	0V	0V	2.4 V.C.	70VDC	-13VDC	0V	6.4VAC	-.6VDC
V 2	6J5	0V	0V	2.4VDC	0V	-13VDC	0V	6.4VAC	0V
V 3	6SK7	0V	0V	1.2VDC	-.6VDC	1.2VDC	70VDC	6.4VAC	240VDC
V 4	6H6	0V	6.4VAC	-.6VDC	0V	0V	0V	0V	0V
V 5	6SQ7	0V	-.6VDC	0V	0V	0V	95VDC	6.4VAC	0V
V 6	6V6GT	0V	0V	255VDC	240VDC	0V	0V	6.4VAC	13VDC
V 7	5Y3GT	0V	265VDC	0V	270VAC	0V	270VAC	0V	265VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SA7	0Ω	0Ω	1000Ω*	2.1	0	0	.1	.9 Meg.
V 2	6J5	0Ω	0Ω	1000Ω*	Inf.	0	Inf.	.1	.9Ω
V 3	6SK7	0Ω	0Ω	220Ω	3.8 Meg.	220Ω	23KΩ*	.1	100Ω*
V 4	6H6	Inf.	.1Ω	550KΩ	0Ω	0Ω	Inf.	0Ω	0Ω
V 5	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	470KΩ*	.1	0
V 6	6V6GT	0Ω	0Ω	330Ω*	1000Ω*	470KΩ	Inf.	.1	330Ω
V 7	5Y3GT	Inf.	50KΩ	Inf.	250Ω	Inf.	250Ω	Inf.	50K

* Measured from pin 8 tube V7 (5Y3GT)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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498-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRADE NAME	Masco, Model MA-25EX
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St. Long Island 3, New York
TYPE SET	AC Operated 3 Channel Audio Amplifier
TUBES(NINE)	Types 12SC7-Phono Pre Amp., 12SJ7 Mic,. Pre Amp., 6SN7GT Mixer-1st AF Amp., 6SL7GT Expander Amp.-Rectifier, 6SN7GT 2nd AF Amp.,-Expander 6SL7GT 3rd AF Amp.-Phase Inv. (2) 6L6G Power Output, 5V4G Rectifier
POWER SUPPLY	105-125 Volts AC RATING 1.15 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SC7	0V	45VDC	0V	-.2VDC	45VDC	0V	9.6VDC	0V
2	12SJ7	0V	9.6VDC	0V	-.2VDC	0V	12VDC	18VDC	13VDC
3	6SN7GT	0V	48VDC	1.6VDC	0V	65VDC	2.2VDC	** 28VDC	** 28VDC
4	6SL7GT	-.4VDC	-.4VDC	0V	0V	125VDC	1.5VDC	** 28VDC	** 28VDC
5	6SN7GT	-.5VDC	25VDC	0V	-.8VDC	75VDC	1.2VDC	** 28VDC	** 28VDC
6	6SL7GT	-.6VDC	150VDC	1VDC	-2VDC	140VDC	.8VDC	** 28VDC	** 28VDC
7	6L6G	0V	** 28VDC	380VDC	260VDC	0V	260VDC	** 28VDC	** 28VDC
8	6L6G	0V	** 28VDC	380VDC	260VDC	0V	0V	** 28VDC	** 28VDC
9	5V4G	0V	400VDC	0V	350VAC	0V	350VAC	0V	1 400VDC

** 6.3 Volts will be measured between lugs on each socket.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SC7	0Ω	*160KΩ	3.5Meg.	3 Meg.	* 160KΩ	0Ω	12Ω	0Ω
2	12SJ7	0Ω	12Ω	0Ω	5.6 Meg.	0Ω	* 1.2Meg	24Ω	340KΩ *
3	6SN7GT	550KΩ	90KΩ*	1500Ω	300KΩ	70KΩ *	1500Ω	100Ω	100Ω
4	6SL7GT	1 Meg.	1 Meg.	100KΩ	200KΩ	140KΩ *	3.3KΩ	100Ω	100Ω
5	6SN7GT	1 Meg.	110KΩ *	0Ω	120KΩ	60KΩ *	1000Ω	100Ω	100Ω
6	6SL7GT	8.2KΩ	130KΩ *	1000Ω	120KΩ	130KΩ *	1000Ω	100Ω	100Ω
7	6L6G	0Ω	100Ω	120Ω *	2500Ω *	110KΩ	10KΩ	100Ω	100Ω
8	6L6G	0Ω	100Ω	100Ω *	2500Ω *	100KΩ	Inf.	100Ω	100Ω
9	5V4G	Inf.	13KΩ	Inf.	42Ω	Inf.	46Ω	Inf.	12KΩ

* Measured from pin 8 of 5V4G

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All control at minimum, proper output load connected.

MASCO
MODEL MA-25EX

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
1	Phono Pre Amp.	12SC7	12SC7	8S	
2	Mic. Pre. Amp.	12SJ7	12SJ7	8N	
3	Mixer-1st AF Amp.	6SN7GT	6SN7GT	8BD	
4	Expander Amp.-Rectifier	6SL7GT	6SL7GT	8BD	
5	2nd AF Amp.-Expander	6SN7GT	6SN7GT	8BD	
6	3rd AF Amp.-Phase Inv.	6SL7GT	6SL7GT	8BD	
7	Power Output	6L6G	6L6G	7AC	
8	Power Output	6L6G	6L6G	7AC	
9	Rectifier	5V4G	5V4G	5L	

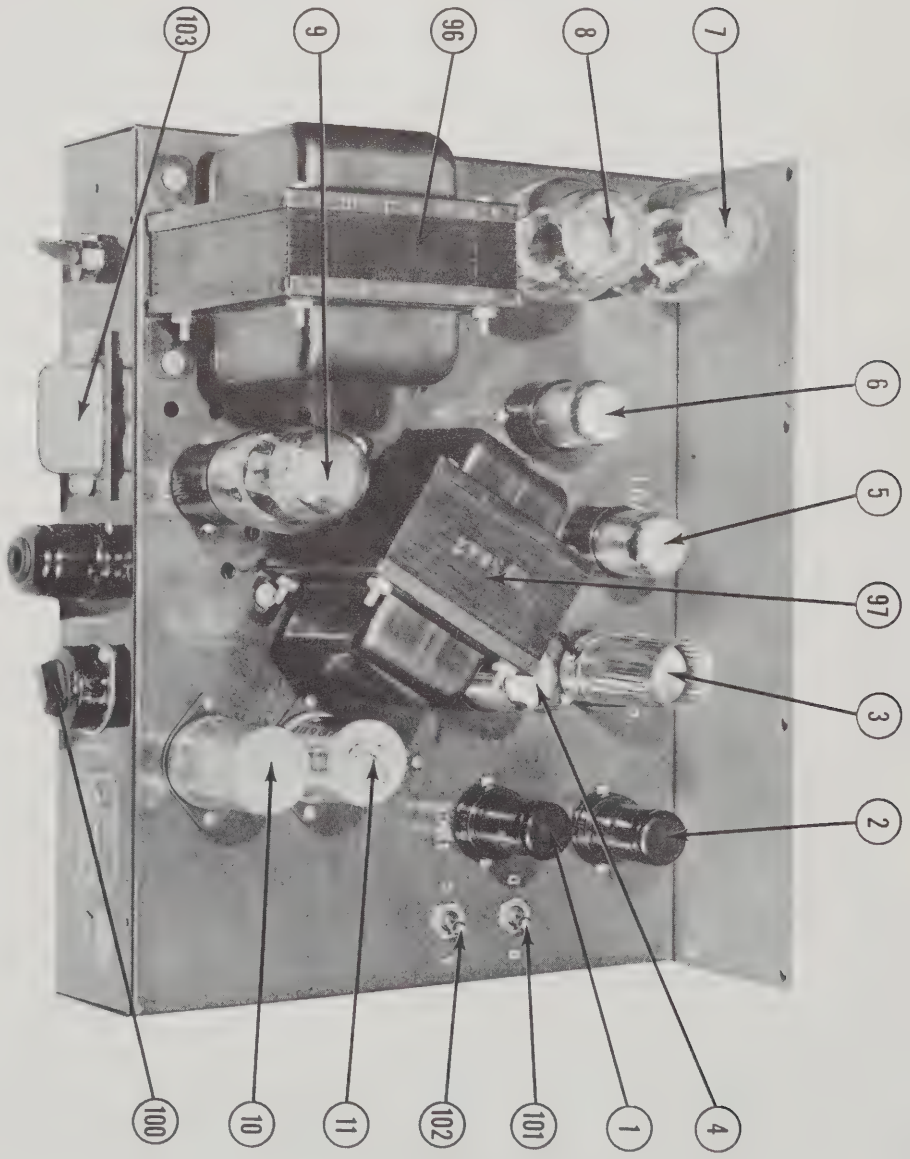
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	10	450		AF2222J	UP1111 45		DY-4X10-450	EL-410	■ Filter
B	10	450							▲ "
C	10	450							◓ "
D	10	450							◒ "
11A	10	450		AF2222J	UP1111 45		DY-4X10-450	EL-410	▲ Decoupling
B	10	450							◓ "
C	10	450							◒ "
D	10	450							■ "
12	50	50		PRS50/50	BR505		M-50-50	TA-550	Output Cath. Bypass
13	50	50		PRS50/50	BR505		M-50-50	TA-550	2nd AF Cath. Bypass
14	50	50		PRS50/50	BR505		M-50-50	TA-5602	Exp. Amp. Cath. Bypass
15	.1	600		630T-.1	DYRT6010		XDMR6-1	TM-1	Line Filter
16	.1	600		684-1	GT6P1		ST-6-1	TC-1	Audio Coupling
17	.1	600		684-1	GT6P1		ST-6-1	TC-1	" "
18	.1	600		684-1	GT6P1		ST-6-1	TC-1	" "
19	.1	600		684-1	GT6P1		ST-6-1	TC-1	Exp. Rect. Filter
20	.5	200		484-5	GT2P5		ST-2-5	68P25	" " "
21	.1	600		684-1	GT6P1		ST-6-1	TC-1	" " "
22	.1	600		684-1	GT6P1		ST-6-1	TC-1	Audio Coupling
23	.1	600		684-1	GT6P1		ST-6-1	TC-1	" "
24	.1	600		684-1	GT6P1		ST-6-1	TC-1	" "
25	.05	400		484-05	GT4S5		ST-4-05	TC-15	Tone Compensation
26	.005	600		684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
27	.01	400		484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
28	.001	600		684-001	GT6D1	GP2L-001	ST-6-001	TC-21	" "
29	.02	600		684-02	GT6S2		ST-6-02	TC-12	Mixer Cath. Bypass
30	.01	600		684-01	GT6S1	GP2-335-01	ST-6-01	TC-11	Audio Coupling
31	.005	600		684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
32	.1	600		684-1	GT6P1		ST-6-1	TC-1	Mike Pre Amp Screen Byp
33	.01	600		684-01	GT6S1	GP2-335-01	ST-6-01	TC-11	Audio Coupling
34	.01	600		684-01	GT6S1	GP2-335-01	ST-6-01	TC-11	" "
35	.05	600		684-05	GT6S5		ST-6-05	TC-15	" "
36	.001	600		684-001	GT6D1	GP2L-001	ST-6-001	TC-21	Tone Comp. Note
37	.1	600		684-1	GT6P1		ST-6-1	TC-1	Phono Pre Amp. Decoup.
38	.1	600		684-1	GT6P1		ST-6-1	TC-1	" " " "
39	500	500		1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	2nd AF Plate Bypass
40	500	500		1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Equalization Net.

Note. Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

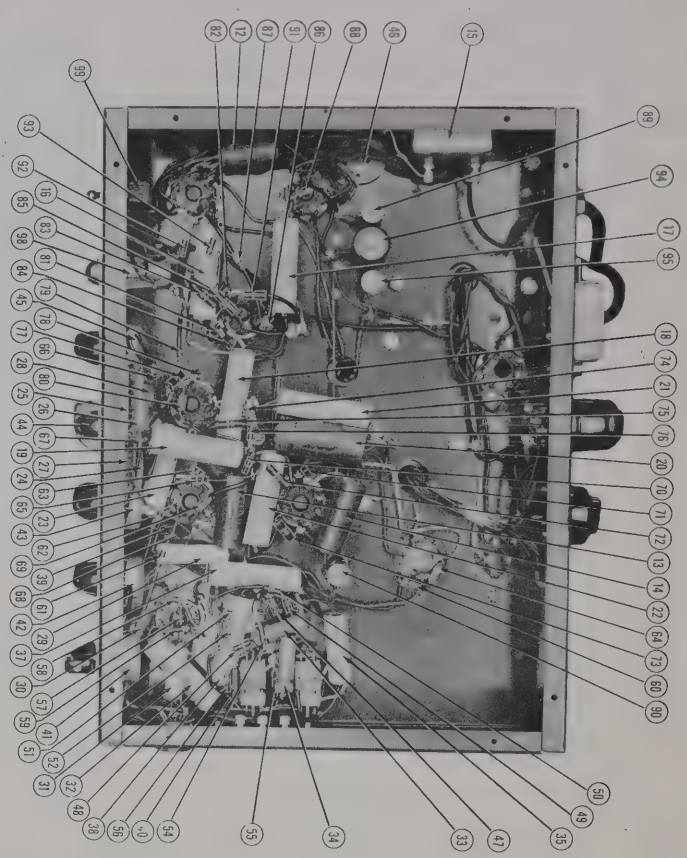
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	
41A	500KΩ	½		D13-133	M-60-Z	Mike control
B	Shaft			A	Not Req.	Attach to 41A Per Instructions
42A	1 Meg.	½		DVC-539X		Radio-Phono Volume control tapped @ 500KΩ
B	Shaft			A		Attach to 42A Per Instructions
43A	500KΩ	½		D13-133	M-60-Z	Expander Control
B	Shaft			A	Not Req.	Attach to 43A Per Instructions
44A	500KΩ	½		D13-133	M-60-Z	Treble control
B	Shaft			A	Not Req.	Attach to 44A Per Instructions
45A	500KΩ	½		D13-133	M-60-Z	Bass control
B	Shaft			A	Not Req.	Attach to 45A Per Instructions
46	50Ω	1		W-50	43-50	Hum balance control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.		
47	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn.	Phono Pre. Amp Grid
48	10KΩ	½		BTS-10K	Br.-Blk.-Or.	Phono Pre. Amp Plate Load
49	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn.	Phono Pre. Amp Grid
50	10KΩ	½		BTS-10K	Br.-Blk.-Or.	Phono Pre. Amp Plate Load
51	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Phono Pre. Amp Plate Decoupling
52	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" " " "
53	150KΩ	½		BTS-150K	Br.-Grn.-Yl.	Tone Compensation See Note
54	470Ω	½		BTS-4700	Yl.-Vi.-Red	Equalization Network
55	27KΩ	½		BTS-27K	Red-Vi.-Or.	" "
56	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	" "
57	5.6 Meg.	½		BTS-5.6 Meg.	Grn.-Blue-Grn.	Mike Amp. Grid
58	270KΩ	½		BTS-270K	Red-Vi.-Yl.	Mike Amp. Plate
59	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	Mike Amp. Screen
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Bleeder
61	270KΩ	½		BTS-270K	Red-Vi.-Yl.	Isolation
62	270KΩ	½		BTS-270K	Red-Vi.-Yl.	"
63	1500Ω	½		BTS-1500	Br.-Grn.-Red	Mixer Cathode
64	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Voltage Dropping
65	27KΩ	½		BTS-27K	Red-Vi.-Or.	Mixer Plate Load
66	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Tone Compensation
67	10KΩ	½		BTS-10K	Br.-Blk.-Or.	1st AF Grid
68	1500Ω	½		BTS-1500	Br.-Grn.-Red	1st AF Cathode
69	47KΩ	½		BTS-47K	Yl.-Vi.-Or.	1st AF Plate Load
70	27KΩ	½		BTS-27K	Red-Vi.-Or.	1st AF Plate Decoupling
71	3300Ω	½		BTS-3300	Or.-Or.-Red	Expander Amp. Cathode
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Expander Amp. Plate Load
73	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Expander Rectifier Cathode
74	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Filter
75	100KΩ	½		BTS-100K	Br.-Blk.-Grn.	"
76	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn.	Bleeder
77	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	2nd AF Grid
78	1000Ω	½		BTS-1000	Br.-Blk.-Red	2nd AF Cathode
79	47KΩ	½		BTS-47K	Yl.-Vi.-Or.	2nd AF Plate Load
80	47KΩ	½		BTS-47K	Yl.-Vi.-Or.	Expander Plate Load
81	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	3rd AF Grid
82	1000Ω	½		BTS-1000	Br.-Blk.-Red	3rd AF Cathode
83	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	3rd AF Plate Load
84	1000Ω	½		BTS-1000	Br.-Blk.-Red	Phase Inv. Cathode
85	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Phase. Inv. Plate Load
86	8200Ω	½		BTS-8200	Gray-Red-Red	Phase Inv. Grid
87	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Output Grid
88	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	" "
89	750Ω	10		AB-750		Output Cathode
90	80Ω	10		AB-75		Filament Dropping
91	8200Ω	½		BTS-8200	Gray-Red-Red	Feedback
92	12KΩ	½		BTS-12K	Br.-Red-Or.	Decoupling
93	12KΩ	½		BTS-12K	Br.-Red-Or.	"
94	10K	20		DG-10K		Bleeder
95	2500	10		AB-2500		Filter

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
96	125VAC Tap @ 117VAC @ 1.15 A	700VAC CT .160ADC	5VAC 2A	6.4VAC 3.9A	P-25A	P-4081 #	PV-200 #	P-3155 #*

* Drill new mounting holes.
\# Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

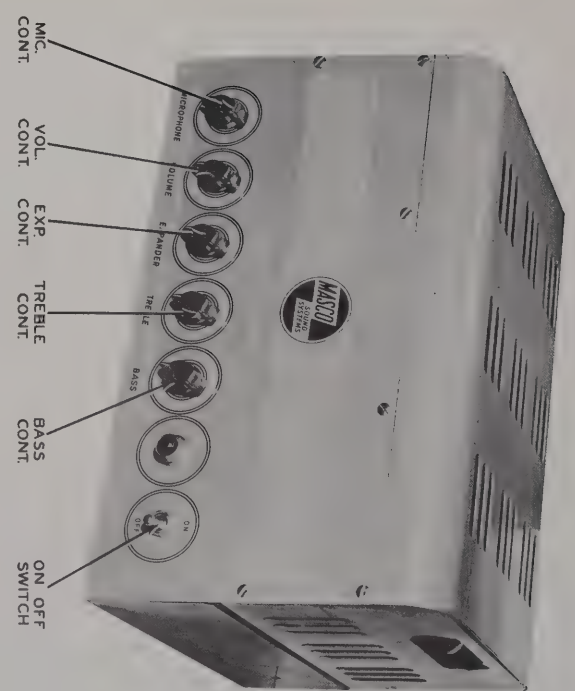
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
97	7000Ω CT	4Ω 8Ω 16Ω 125Ω 250Ω 500Ω	205Ω CT	.4Ω .5Ω .8Ω 10Ω 14Ω 20Ω	T-25HF	A-3801	PCO-80	A-3130	

DIAL LIGHTS

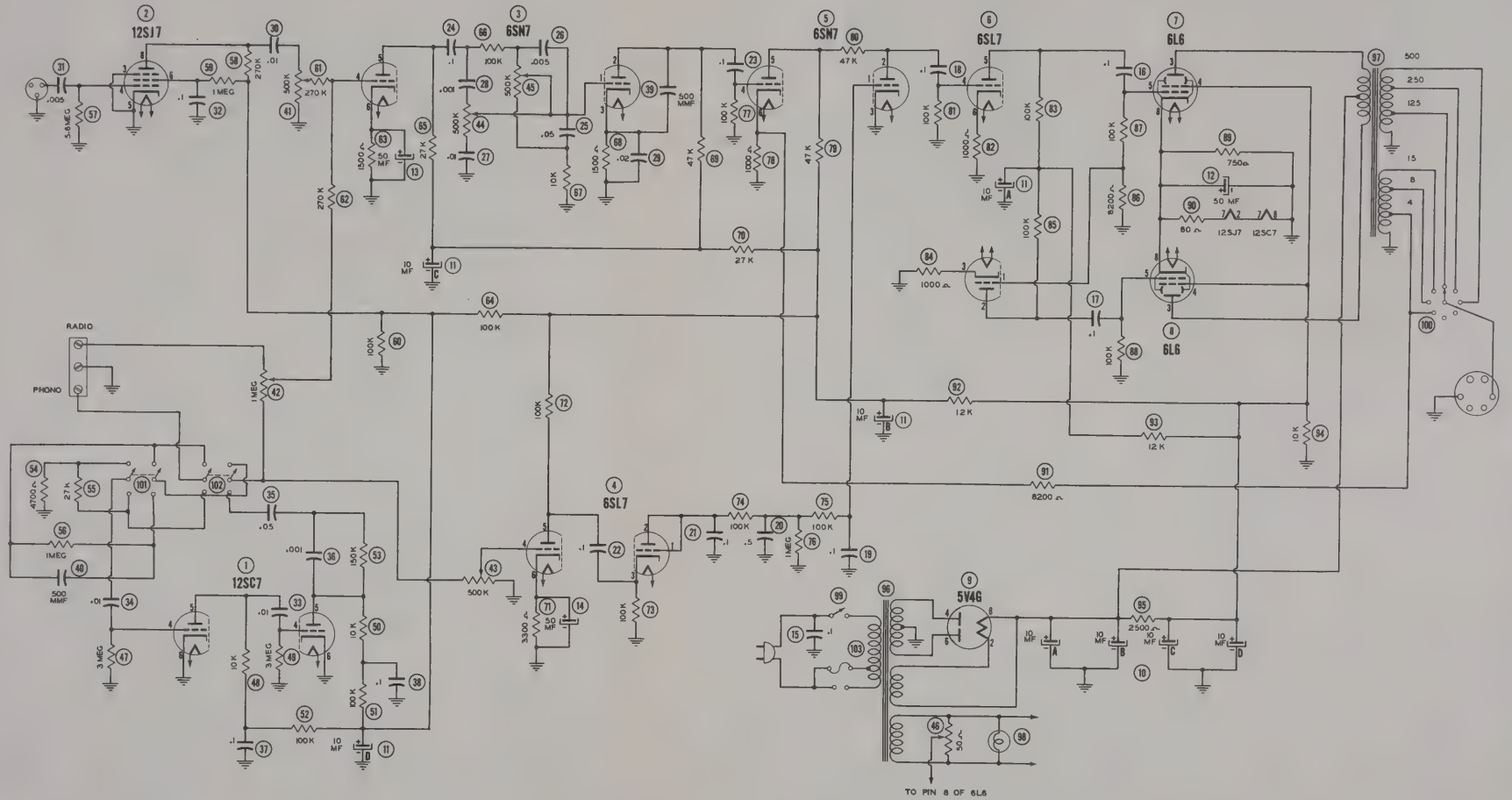
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
98	Bayonet	6-8V	0.15A	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
99	Switch		Power
100	Switch		Impedence Selector
101	Switch		Pick-up Selector
102	Switch		Pick-up Selector
103	Fuse		1.5 Amp



DATE 4/49 4-38-15 SET #60 FOLDER 15



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OLDSMOBILE, MODEL 982454

TRADE NAME	Oldsmobile, Model 982454
MANUFACTURER	Oldsmobile Motors, Div. General Motors Corp., Lansing, Michigan
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types 7A7 RF Amp., 7Q7 Converter, 7A7 IF Amp., 7B6 DET-AVC-AF, 7C5 Power Output, 0Z4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery RATING 5.6 Amp., @ 6 Volts DC
TUNING RANGE—BROADCAST	550-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The dummy antenna of 68MMF is critical and no other value should be used for proper alignment. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid). 7Q7 (V2). Low side to chassis.	260KC	Tuning cap fully open	Across Voice Coil	A1, A2 A3, A4	Adjust for maximum output.
2.	68MMF	High side to Ant. connector. Low side to chassis.	1615KC	"	"	A6	Before adjusting A6 for maximum output, mechanically set the rear of Osc. coil core (A5) 1 3/4" from the mounting end of the coil form.
3.	68MMF	"	1615KC	"	"	A7, A8	Adjust for maximum output.
4.	68MMF	"	600KC	Tune for maximum output.	"	A9, A10	" " " "
5.	68MMF	"	1615KC	Tuning cap fully open	"	A7, A8	" " " "
6.	68MMF	"	600KC	Tune for maximum output.	"	A11	Turn the dial adjustment screw A11 so the dial pointer corresponds to 600KC mark on the dial.

With receiver installed in auto and the antenna connected, tune in a weak station near 1400KC and adjust A8 for maximum volume.

OLDSMOBILE
MODEL 982454

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PARTS LIST AND DESCRIPTIONS

OLDSMOBILE
MODEL 982454

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLDSMOBILE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	7A7	7A7	8V	
V2	Converter	7Q7	7Q7	8AL	
V3	IF Amp.	7A7	7A7	8V	
V4	DET-AVC-AF	7B6	7B6	8W	
V5	Power Output	7C5	7C5	6AA	
V6	Rectifier	0Z4	0Z4	4RM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLDSMOBILE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	400	7241198		UP2245		DY-3X20-450	EL-442*	● Filter
B	20	400			C*				■ "
C	20	25							Output Cath. Bypass
C2	2200		1217744	1467-002	1W5D2	GP2M-0025	MW.5-22	1FM-22	Isolation
C3	.05	200	7236842	P288-05	GT2S5		ST-4-05	TM-12	AVC Filter
C4	68	500	1212359	1468-000075	5W5Q7	GP1K-75	MOS.5-47	1FM-475	RF Coupling
C5	180		7257424			N150-D180			Fixed Trimmer
C6	.05	400	7230892	P488-05	GT4S5		ST-4-05	TM-15	Decoupling
C7	.002	600	7236756	P688-002	GT6D2	GP2M-002	ST-6-002	TM-22	Tone Compensation
C8	.005	600	7232956	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	" "
C9	.005	600	7232456	P688-005	GT6D5	GP2M-005	ST-6-005	TM-25	Audio Coupling
C10	.05	600	7230892	P688-05	GT6S5		ST-6-05	TM-15	" "
C11	.004	800	7233243	P1088-004	GT16D4		STM-16-004	MB-24	Output Plate Bypass
C12	.006	1600	7240906	P1688-006	GT16D6		STM-16-006	MB-26	Buffer

* Omit one section

CONTROLS

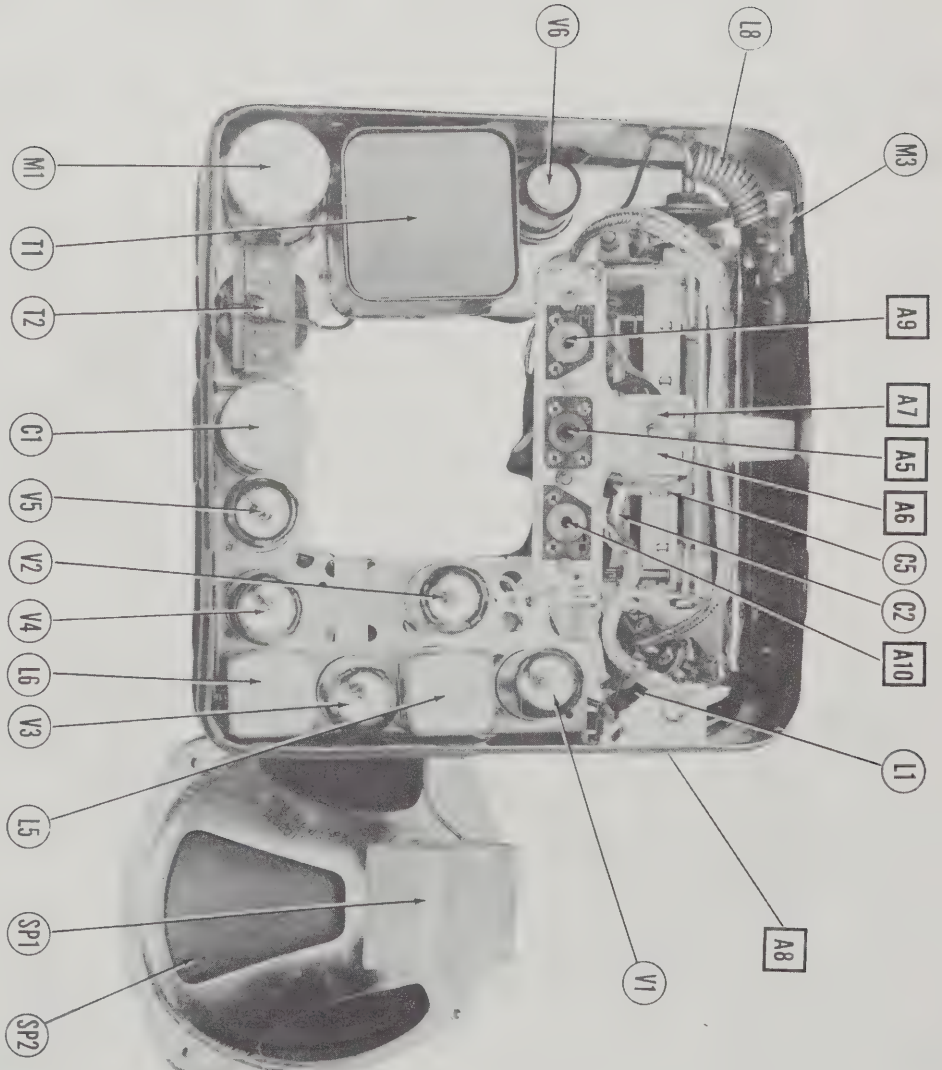
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
R1A	300KΩ	½	7257526			Volume control and SW. tapped @ 600KΩ
B	1 Meg.-Inf.	½				Tone control (Dual concentric)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLDSMOBILE PART No.	IRC PART No.	IDENTIFICATION CODES	
R2	330Ω	½	1213224	BW-½-330	Or.-Or.-Br.	RF Cathode
R3	2.2 Meg.	½	1214563	BTS-2.2 Meg.	Red-Red-Grn.	" Grid
R4	15KΩ	1	7237595	BTA-15K	Br.-Grn.-Or.	" Plate
R5	15KΩ	2	7233653	BT-2-15K	Br.-Grn.-Or.	Screen Dropping
R6	330KΩ	½	1214557	BTS-330K	Or.-Or.-Yl.	AVC Network
R7	22KΩ	½	1214550	BTS-22K	Red-Red-Or.	Osc. Grid
R8	6.8 Meg.	½	1215563	BTS-6.8 Meg.	Blue-Gray-Grn.	AVC Network
R9	1 Meg.	½	1213282	BTS-1 Meg.	Br.-Blk.-Grn.	" "
R10	15 Meg.	½	1213289	BTS-15 Meg.	Br.-Grn.-Blue	AF Grid
R11	220KΩ	½	1214555	BTS-220K	Red-Red-Yl.	" Plate
R12	220KΩ	½	1214555	BTS-220K	Red-Red-Yl.	Output Grid
R13	390Ω	1	1216149	BTA-390	Or.-White-Br.	" Cathode
R14	39KΩ	½	1213480	BTS-39K	Or.-White-Or.	Tone Compensation
R15	1800Ω	2	1214573#	BT-2-1800	Br.-Gray-Red	Filter
R16	220Ω	1	7237994	BW-1-220	Red-Red-Br.	Hash Suppression
R17	220Ω	½		BW-½-220	Red-Red-Br.	IF Cathode Note

This item employs two resistors which must be paralleled to replace item 15.
Note. Not used in all models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER VIBRATOR

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLDSMOBILE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
T1	6VLC	570VCT @ .056A DC			7255881	P-4061‡	VT-2‡	P-2971‡

‡ Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		OLDSMOBILE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6 100Ω	3.8Ω	395Ω	.3Ω	7256664	A-3849†	RO-13†	A-2931†	† Bend mounting tabs down. Drill and file chassis to fit replacement.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			OLDSMOBILE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	7257645	ST-810 MOD.P69-V	69A3	
	PM	3.8Ω				
SP2	CONE DIA.	V. C. DIA.				
	6 X 9"	1"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	OLDSMOBILE PART No.	MEISSNER PART No.	
L1	Ant. Choke Coil	4Ω		7240251		L2, L3, and L4 are permeability tuned and are in gang.
L2	Ant. Coil	11Ω		7257391		
L3	RF Coil	11Ω		7257391		
L4	Osc. Coil	1Ω	4.5Ω	7257386		
L5	Input IF	54Ω	54Ω	7257832	16-6652	
L6	Output IF	32Ω	30Ω	7256662		
L7	Hash Choke	0Ω		7241708		
L8	Spark Choke	0Ω		1217846		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				OLDSMOBILE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6V	115∿	8542	C01	5301	Original Mfg. part no. 7239124

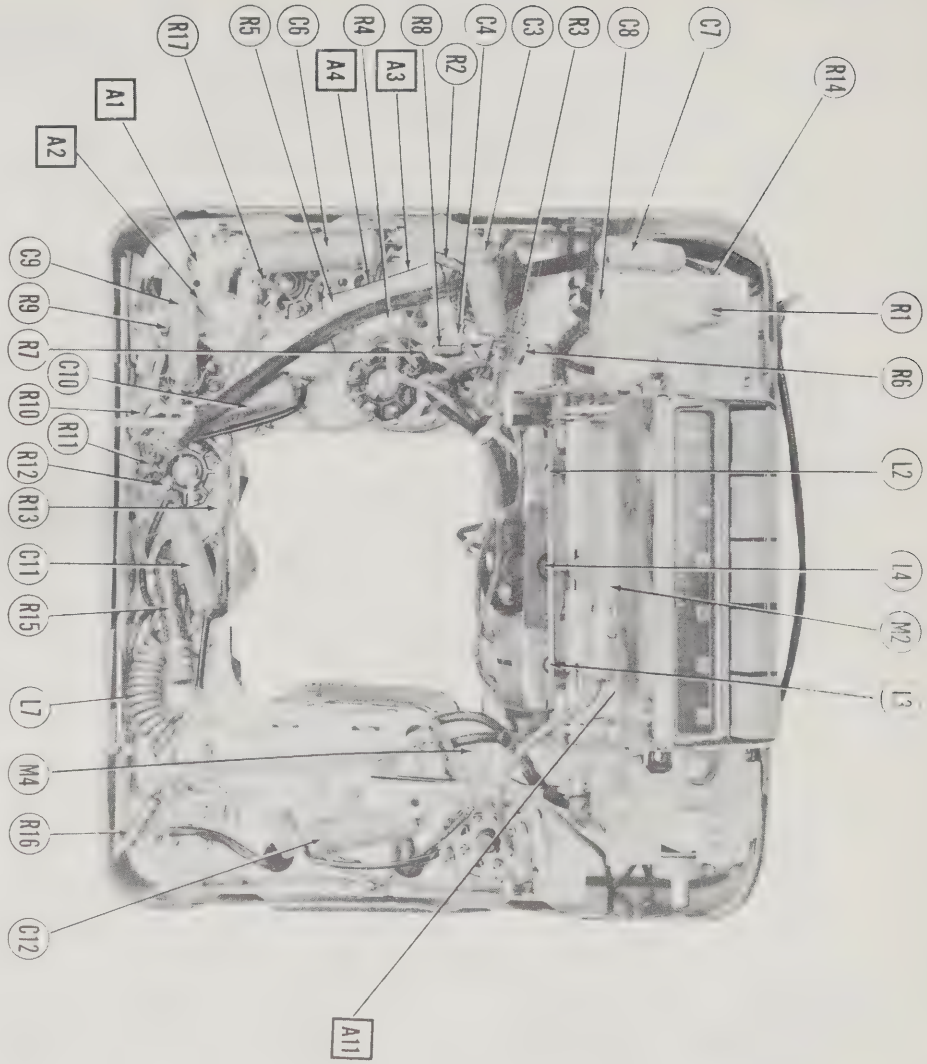
DIAL LIGHTS

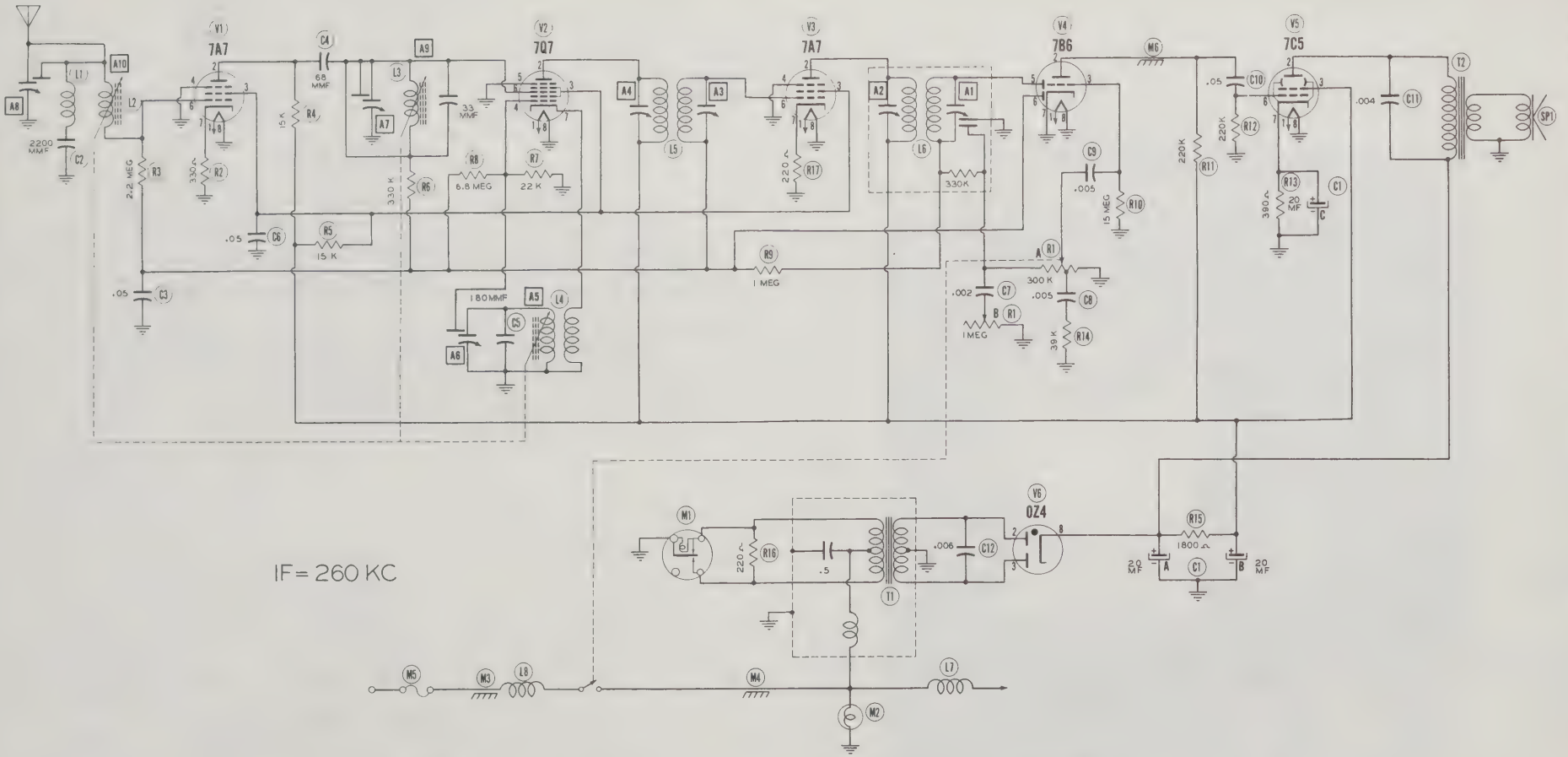
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					OLDSMOBILE PART No.		
M2	Bayonet	6-8V	0.25A	Blue	44		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	OLDSMOBILE PART No.	NOTES
M3	Spark Plate	7241259	
M4	Spark Plate	1217848	
M5	Fuse	120151	15 Amp.
M6	Spark Plate	1217848	
A6, A7	Dual Trimmer	7242454	Osc. Adj. / RF Adj.
A8	Trimmer	7242013	Ant. Adj.
	Dial	7256495	

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A7	-.7V	250VDC	90VDC	0V	0V	-.1VDC	1.6VDC	0V
V 2	7Q7	-.1	250VDC	80VDC	2.8VDC	0V	-.6V	-	0V
V 3	7A7	-.2	250VDC	90VDC	0V	0V	-.1	-.1VDC	0V
V 4	7B6	0V	1.4VDC	-.2VDC	0V	-.2VDC	-.2VDC	0V	0V
V 5	7C5	0V	0VDC	0VDC	0V	0V	0V	11.6VDC	6VDC
V 6	0Z4	-	0VAC	0VAC	0V	220VAC	0V	0V	260VDC

*TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7A7	.7Ω	*17kΩ	*1kΩ	0Ω	0Ω	3.5 Meg.	350Ω	0Ω
V 2	7Q7	0Ω	*18kΩ	*1kΩ	0.1Ω	0Ω	1.5 Meg.	1Ω	.7Ω
V 3	7A7	.2Ω	*1500Ω	*1kΩ	0Ω	0Ω	1.2 Meg.	0.2Ω	0Ω
V 4	7B6	0Ω	*0.2kΩ	1Ω Meg.	0Ω	1.2 Meg.	600kΩ	0Ω	.7Ω
V 5	7C5	0Ω	*44kΩ	*18kΩ	Inf.	Inf.	320kΩ	0.9Ω	.7Ω
V 6	0Z4	0Ω	Inf.	0.1kΩ	Inf.	2.5Ω	Inf.	Inf.	130kΩ

* Measured from pin 8 of V6

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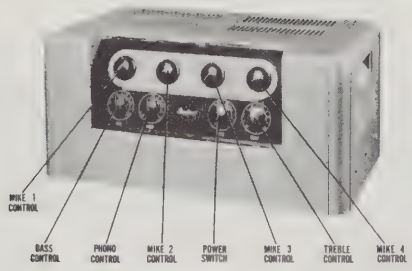
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



RAULAND MODEL 1835

TRADE NAME Rauland, Model 1835
MANUFACTURER The Rauland Corp., 4245 N. Knox Ave., Chicago 41, Illinois.
TYPE SET AC Operated 5 Channel Audio Amplifier.
TUBES (TWELVE) Types 6SF5 Mic 1 Amp., 6SF5 Mic 2 Amp., 6SF5 Mic 3 Amp., 6SF5 Mic 4 Amp.,6SF5 Phono Amp., 6SC7 1st Mixer, 6SC7 2nd Mixer, 6SC7 AF-Phase Inv.,(2)6L6 Power Output,5U4G Rect.,6X5GT Rect
POWER SUPPLY 110-130 Volts AC RATING 1.1 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0V	1.4VDC	0V	0V	125VDC	240VDC	24VDC	24VDC
2	6SF5	0V	1.4VDC	0V	0V	125VDC	240VDC	24VDC	24VDC
3	6SF5	0V	1.4VDC	0V	0V	125VDC	240VDC	24VDC	24VDC
4	6SF5	0V	1.4VDC	0V	240VDC	125VDC	305VDC	24VDC	24VDC
5	6SF5	0V	1.2VDC	0V	0V	100VDC	0V	24VDC	24VDC
6	6SC7	0V	90VDC	0V	0V	100VDC	1VDC	24VDC	24VDC
7	6SC7	0V	90VDC	0V	0V	100VDC	1VDC	24VDC	24VDC
8	6SC7	0V	200VDC	0V	0V	200VDC	2.3VDC	24VDC	24VDC
9	6L6	0V	24VDC	485VDC	350VDC	0V	0V	24VDC	24VDC
10	6L6	0V	24VDC	485VDC	350VDC	0V	0V	24VDC	24VDC
11	5U4G	0V	485VDC	0V	400VAC	0V	400VAC	0V	485VDC
12	6X5GT	0V	24VDC	270VAC	0V	270VAC	0V	24VDC	350VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SF5	0Ω	3.3KΩ	2.2 Meg.	0Ω	350KΩ	90KΩ	250Ω	250Ω
2	6SF5	0Ω	3.3KΩ	2.2 Meg.	0Ω	350KΩ	90KΩ	250Ω	250Ω
3	6SF5	0Ω	3.3KΩ	2.2 Meg.	0Ω	350KΩ	90KΩ	250Ω	250Ω
4	6SF5	0Ω	3.3KΩ	2.2 Meg.	90KΩ	350KΩ	90KΩ	250Ω	250Ω
5	6SF5	0Ω	4.7KΩ	0Ω	2 Meg.	140KΩ	10Ω	250Ω	250Ω
6	6SC7	0Ω	140KΩ	0Ω	0Ω	140KΩ	350Ω	250Ω	250Ω
7	6SC7	0Ω	140KΩ	0Ω	0Ω	140KΩ	350Ω	250Ω	250Ω
8	6SC7	0Ω	190KΩ	6.8KΩ	100KΩ	190KΩ	1KΩ	250Ω	250Ω
9	6L6	0Ω	250Ω	200KΩ	80KΩ	227KΩ	120Ω	250Ω	250Ω
10	6L6	0Ω	250Ω	200KΩ	80KΩ	220KΩ	0Ω	250Ω	250Ω
11	5U4G	Inf.	200KΩ	Inf.	41Ω	Inf.	37Ω	Inf.	200KΩ
12	6X5GT	Inf.	250Ω	28Ω	Inf.	26Ω	Inf.	250Ω	80KΩ

Voltage across filament pins measures 6.6VAC

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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DATE 4/49 498-17 SET #60 FOLDER 17

RAULAND
MODEL 1835

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RAULAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. #1 Amp.	6SF5	6SF5	6AB	
2	Mic. #2 Amp.	6SF5	6SF5	6AB	
3	Mic. #3 Amp.	6SF5	6SF5	6AB	
4	Mic. #4 Amp.	6SF5	6SF5	6AB	
5	Phono Amp.	6SF5	6SF5	6AB	
6	1st Mixer	6SC7	6SC7	8S	
7	2nd Mixer	6SC7	6SC7	8S	
8	AF-Phase Inv.	6SC7	6SC7	8S	
9	Power Output	6L6	6L6	7AC	
10	Power Output	6L6	6L6	7AC	
11	Rectifier	5U4G	5U4G	5T	
12	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

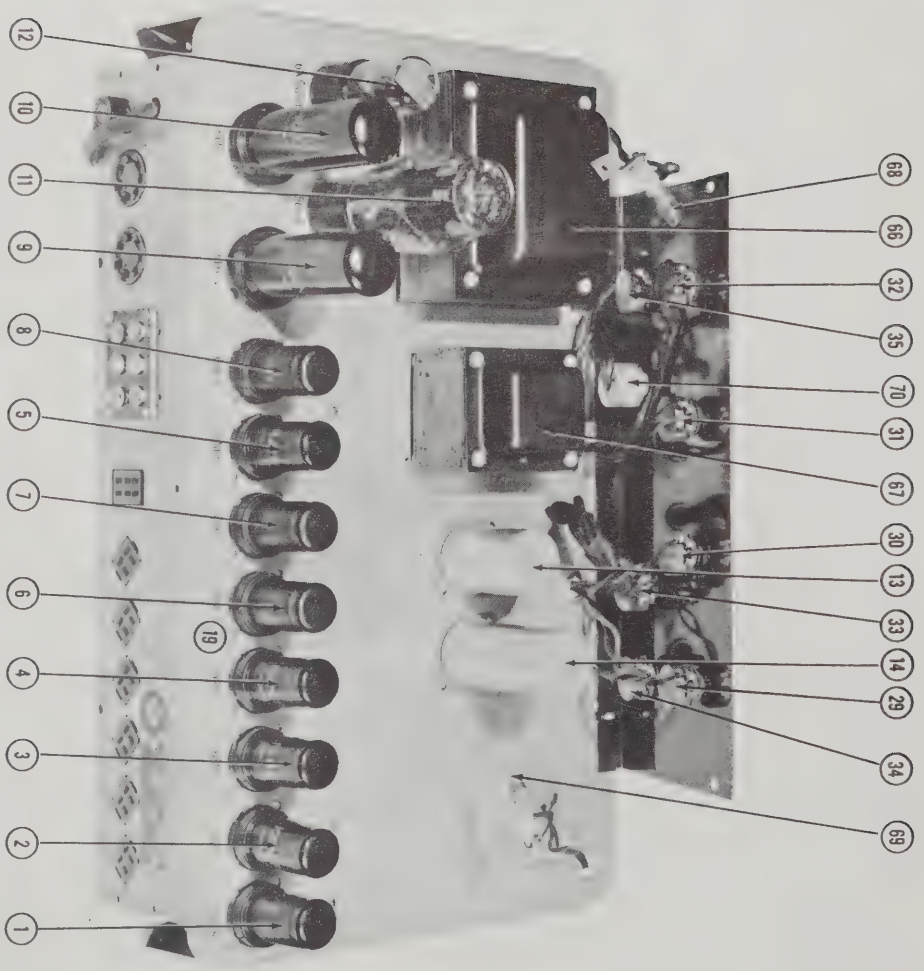
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13	30	500	CE-306-E	PRS 600/16*	UP2250			EL-3	Filter.
14A	40	450	CE-706A	AF2222J	UP4445		DY-2X40-450	EL-240	◓ Filter
B	10	450		PRS 450/30					◙ Filter.
C	10	450							▲ Filter.
D	10	450							Filter.
15	8	450	CE-805B	PRS 450/8	BR845		M-8-450	UT-8	Decoupling.
16A	40	25		PRS150/40-40	BRD4415		DSB-2X40-150	TA-440	Cathode Bypass.
B	40	25							" "
17A	40	25		PRS150/40-40	BRD4415		DSB-2X40-150	TA-440	" "
B	40	25							" "
18	40	25		PRS 25/50	BR502		M-50-25	TA-50	" "
19	.05	600		684-05	GT6S5		ST-6-05	TC-15	Audio Coupling.
20	.05	600		684-05	GT6S5		ST-6-05	TC-15	" "
21	.1	600		684-1	GT6P1		ST-2-1	TC-1	" "
22	.001	600		684-001	GT6D1	GP2L-001	ST-6-001	TC-21	Tone Compensation.
23	.05	600		684-05	GT6S5		ST-6-05	TC-15	" "
24	.5	200		484-5	GT2P5		ST-2-5	TC-5	Cathode Bypass.
25	.02	600		684-02	GT6S2		ST-6-02	TC-12	Audio Coupling.
26	.02	600		684-02	GT6S2		ST-6-02	TC-12	" "
27	.02	600		684-02	GT6S2		ST-6-02	TC-12	" "
28	.02	600		684-02	GT6S2		ST-6-02	TC-12	" "

* Use 2 in parallel.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
29A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Mike 1 Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 29A per instructions.
30A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Mike 2 Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 30A per instructions.
31A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Mike 3 Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 31A per instructions.
32A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Mike 4 Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 32A per instructions.
33A	1 Meg.	½	RP-105A	DVC-539X		Phono Control tapped @ 500KΩ.
B	Shaft		Not Req.	E		Attach to 33A per instructions.
34A	2 Meg.	½	RP-205B		AM-83-S	Bass Control.
B	Shaft		Not Req.		KSS-3	Attach to 34A per instructions.
35A	500KΩ	½	RP-504B	D13-133	AM-60-Z	Treble Control.
B	Shaft		Not Req.	E	KSS-3	Attach to 35A per instructions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	RAULAND PART No.	IRC PART No.		
36	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	1st Mic Amp. Grid.
37	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	2nd Mic Amp. Grid.
38	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	3rd Mic Amp. Grid.
39	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn.	4th Mic Amp. Grid.
40	3300Ω	½		BTS-3300	Or.-Or.-Red.	1st Mic Amp. Cathode.
41	3300Ω	½		BTS-3300	Or.-Or.-Red.	2nd Mic Amp. Cathode.
42	3300Ω	½		BTS-3300	Or.-Or.-Red.	3rd Mic Amp. Cathode.
43	3300Ω	½		BTS-3300	Or.-Or.-Red.	4th Mic Amp. Cathode.
44	220KΩ	½		BTS-220K	Red-Red-Yl.	1st Mic Amp. Plate Load.
45	220KΩ	½		BTS-220K	Red-Red-Yl.	2nd Mic Amp. Plate Load.
46	220KΩ	½		BTS-220K	Red-Red-Yl.	3rd Mic Amp. Plate Load.
47	220KΩ	½		BTS-220K	Red-Red-Yl.	4th Mic Amp. Plate Load.
48	470KΩ	½		BTS-470K	Yl.-Vi.-Yl.	Bias.
49	470KΩ	½		BTS-470K	Yl.-Vi.-Yl.	"
50	470KΩ	½		BTS-470K	Yl.-Vi.-Yl.	"
51	4700Ω	½		BTS-4700	Yl.-Vi.-Red.	Phono Amp.
52	340Ω	½		BW-½-330	Or.-Yl.-Br.	Mixer Cathode.
53	10Ω	½		BW-½-10	Br.-Blk.-Blk.	"
54	47KΩ	1		BTA-47K	Yl.-Vi.-Or.	Mixer Plate Load.
55	10KΩ	1		BTA-10K	Br.-Blk.-Or.	Decoupling.
56	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	AF Grid.
57	1000Ω	½		BTS-1000	Br.-Blk.-Red.	AF Cathode.
58	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	AF Plate Load.
59	6800Ω	½		BTS-6800	Blue-Gray-Red.	Phase Inverter Grid.
60	100KΩ	½		BTS-100K	Br.-Blk.-Yl.	Phase Inverter Plate Load.
61	4700Ω	1		BTA-4700	Yl.-Vi.-Red.	Filter.
62	220KΩ	½		BTS-220K	Red-Red-Yl.	Output Grid.
63	220KΩ	½		BTS-220K	Red-Red-Yl.	Output Grid.
64	250Ω	10		AB-250		Output Cathode.
65	8200	½		BTS-8200	Gray-Red-Red.	Feedback.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	CHICAGO PART No.	UTAH PART No.
66	117 VAC @1.1A	800 VCT .085 ADC and 540 VCT .015 ADC Common CT.	5.4 VCT @ 3.0A	6.6 VCT @ 5.0A	LP-0173			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RAULAND PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
67	7500Ω CT	500Ω 250Ω 16Ω 8Ω 4Ω	230Ω CT	17Ω 11Ω .5Ω .4Ω .3Ω	LO-0095		PCO-80 #	A-3128 #	# Drill new mounting holes.

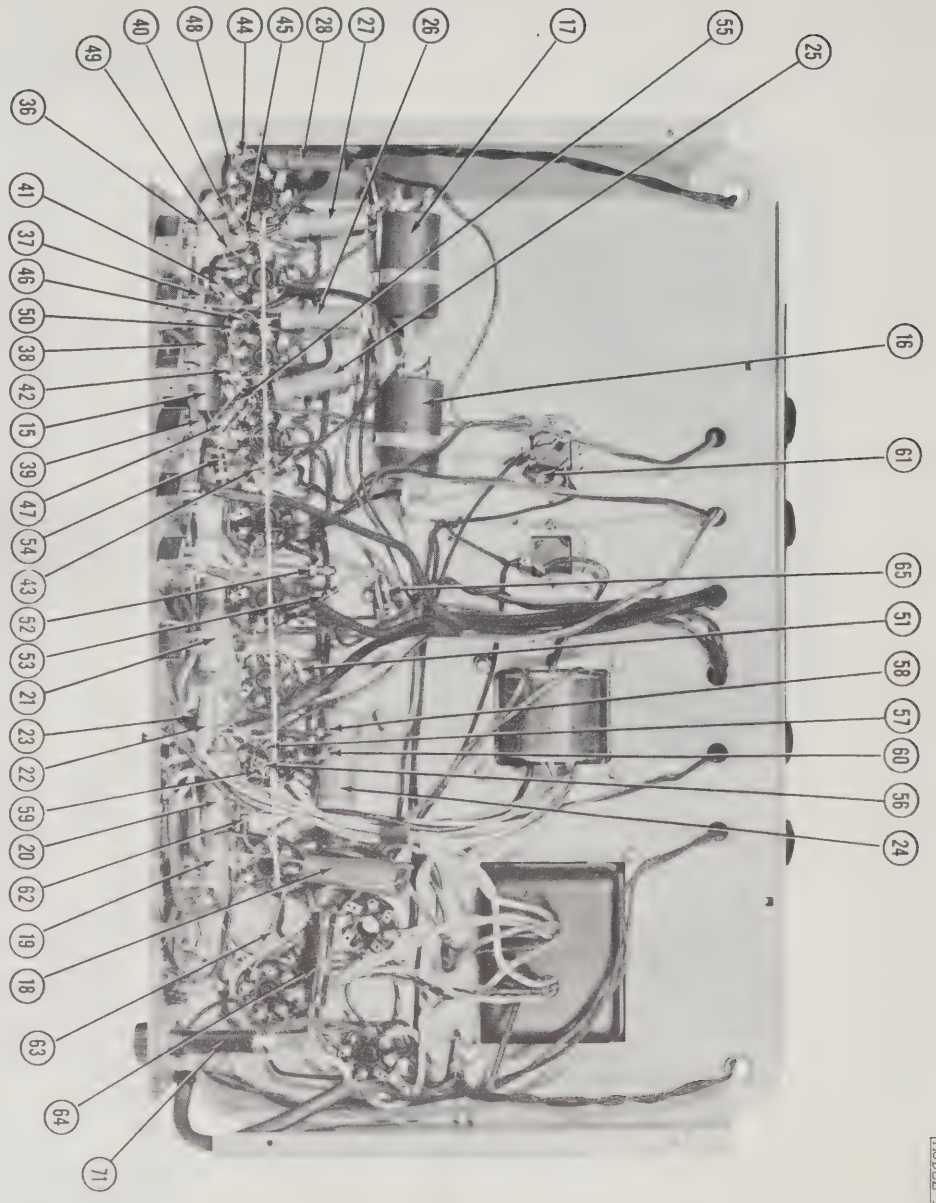
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RAULAND PART No.		
68	Bayonet	6-8V	0.25A	Blue			Type #44
69	"	6-8V	0.25A	"			" 44

MISCELLANEOUS

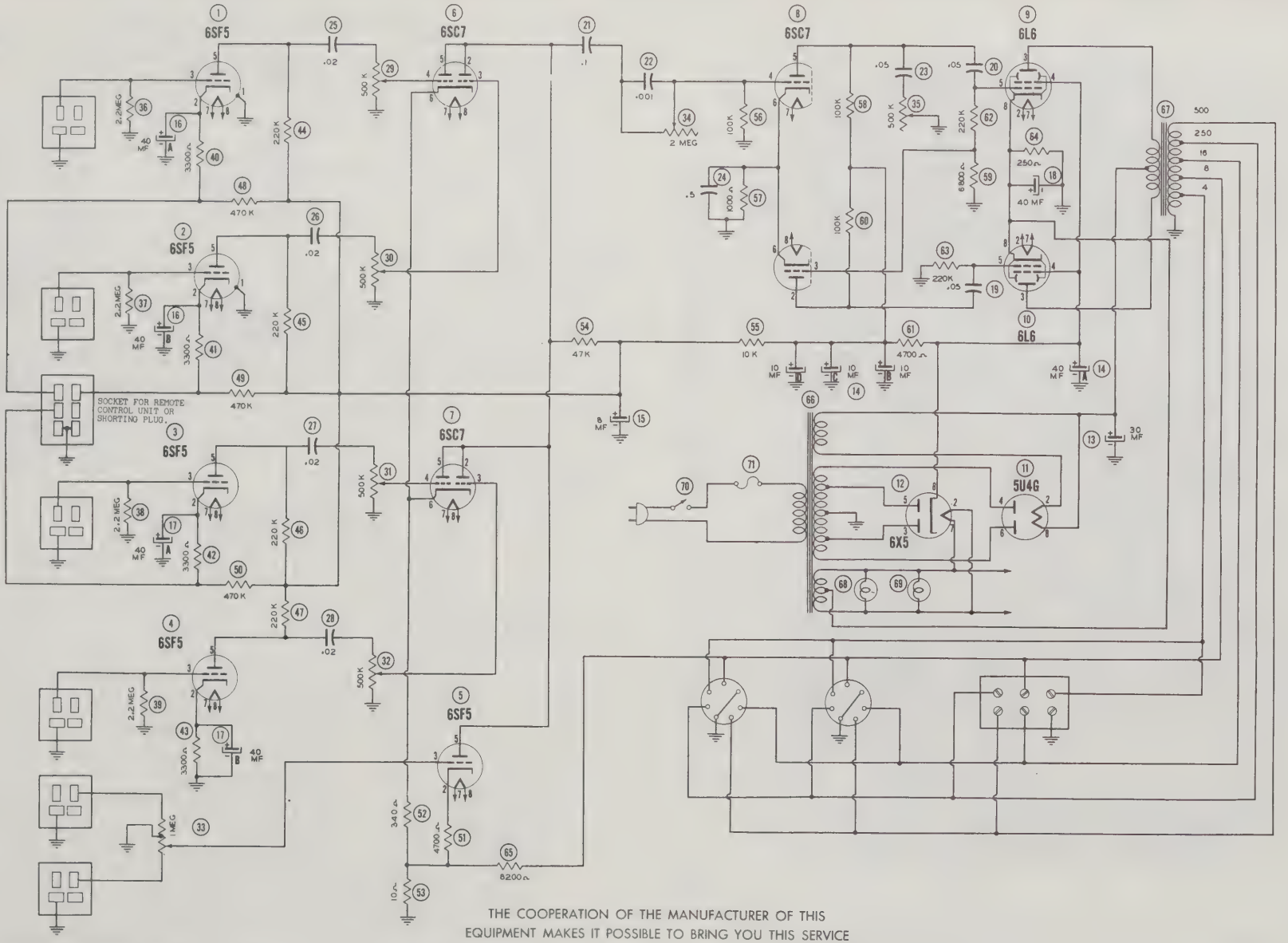
ITEM No.	PART NAME	RAULAND PART No.	NOTES
70	Switch	X-0235	On-off.
71	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW



RAULAND MODEL 1835

RAULAND MODEL 1835



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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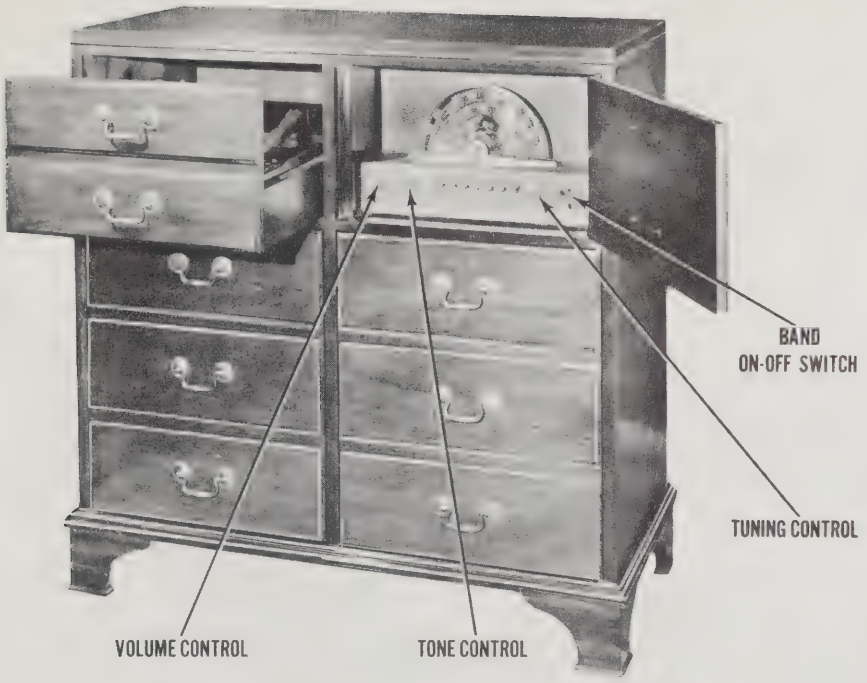
PHOTOFACT* Folder

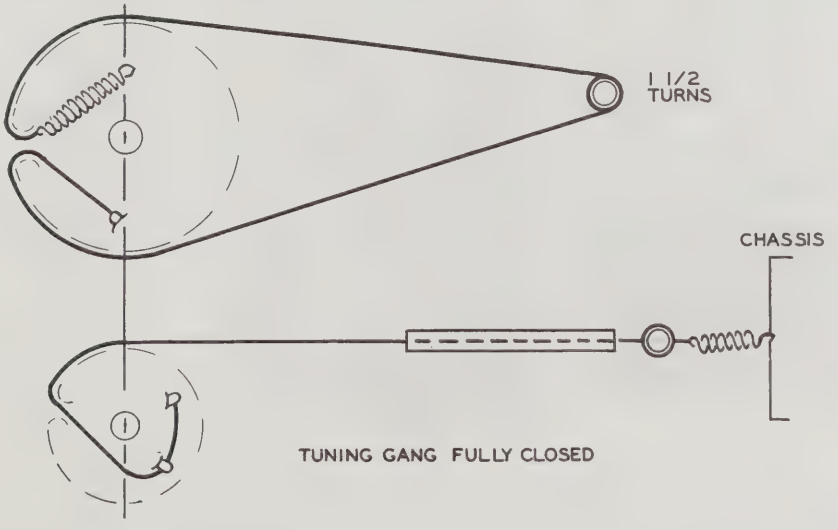
*TRADE MARK

SPARTON
MODELS 1000, 1001, 1003, 1020, 1021, 1023



SPARTON MODEL 1003

TRADE NAME	Sparton, Models 1000, 1001 1003, 1020, 1021, 1023 (Ch. 12L7)
MANUFACTURER	Sparks-Withington Co., Jackson, Michigan
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(THIRTEEN)	Types 6BA6 RF Amp., 6BE6 Converter, 7A7 1st IF Amp., 7A7 2nd IF Amp., 7C7 FM 3rd IF Amp., 6H6GT FM Det., 7C6 AM DET-AVC-AF, 6E5 Tuning Ind., 7A4 2nd AF, 7A4 Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .84 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1630KC SHORT WAVE 5.5-16.5MC FREQ. MOD. 88-108MC



DIAL CORD DRIVE

SPARTON
MODELS 1000, 1001, 1003,
1020, 1021, 1023

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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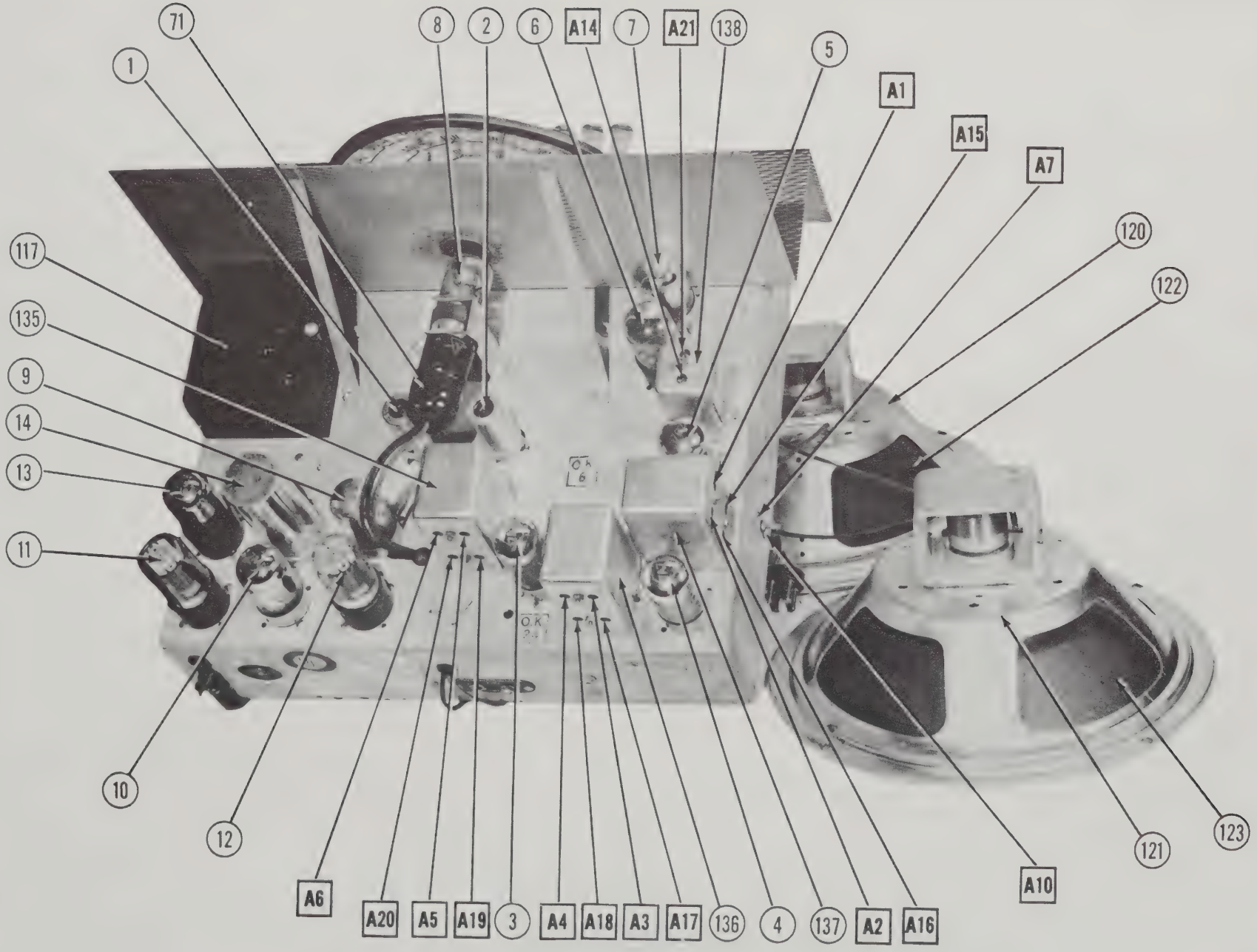
DATE 4/49 498-18 SET #60 FOLDER 18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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	RF Amp.	6BA6	6BA6	7BK	
2.	Converter	6BE6	6BE6	7CH	
3.	1st IF Amp.	7A7	7A7	8V	
4.	2nd IF Amp.	7A7	7A7	8V	
5.	FM 3rd IF	7C7	7C7	8V	
6.	FM Det.	6H6GT	6H6GT	7Q	
7.	AM DET-AVC-AF	7C6	7C6	8W	
8.	Tuning Indicator	6E5	6E5	6R	
9.	2nd AF Amp.	7A4	7A4	5AC	
10.	Phase Inverter	7A4	7A4	5AC	
11.	Power Output	6V6GT	6V6GT	7AC	
12.	Power Output	6V6GT	6V6GT	7AC	
13.	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	SPARTON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
14A	30	450	PA4307-1	AF444J4A*	UP222 450C*		DY-403	EL-424*	▲ Filter
B	20	450		PRS25/25	BR252A		M-25-25	TA-25	■ Filter ▲ "
C	15	450							Cathode Bypass
D	50	25							1st AF Decoupling
15	4	400	PA4303-1	PRS450/4	BR445		M-4-450	UT-4	Stabilizing Cap.
16	3	50	PA4308-1	PRS150/4	BR415		M-4-450	TA-55	Osc. Plate Decoupling
17	4	250	PA4303-8	PRS350/4	BR425		M-4-450	UT-42	Line Filter
18	.05	600	PC45GM-503	684-05	GT6S5		MPH-6-05	TC-15	Output Plate Bypass
19	.006	1000	PC40HN-602	1084-006	GT16D6		STM-16-006	TR-26	Audio Coupling
20	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	" "
21	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	" "
22	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	" "
23	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	Tone Compensation
24	.005	400	PC40HK-502	484-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
25	.01	200	PC40HK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	3rd IF Plate Decoup.
26	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	2nd IF Plate Decoup.
27	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	1st IF Plate Decoup.
28	.05	400	PC40HL-503	484-05	GT4S5		ST-4-05	TC-15	AVC Filter
29	.1	200	PC40HK-104	484-1	GT2P1		ST-2-1	TC-1	Decoupling
30	.05	600	PC40HL-503	684-05	GT6S5		ST-6-05	TC-15	Phono Tone Comp.
31	.01	200	PC40HK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	Audio Coupling
32	.01	200	PA4325-1	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	AVC Filter
33	.001	200	PA4325-2	484-001	GT6D1	GP2L-001	ST-6-001	TC-21	3rd IF Screen Bypass
34	.01	300	PA4325-4	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	3rd IF Cathode Bypass
35	.01	200	PC45GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	2nd IF Screen Bypass
36	.01	300	PA4325-4	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	2nd IF Cathode Bypass
37	.01	200	PC45GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	AVC Filter
38	.01	200	PC45GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	1st IF Screen Bypass
39	.01	300	PA4325-4	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	1st IF Cath. Bypass
40	.01	200	PC45GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	AVC Filter
41	.01	200	PC45GK-103	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	Conv. Plate Decoup.
42	.01	400	PC45GL-103	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	AVC Filter
43	.01	200	PA4325-1	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	RF Cath. Bypass
44	.01	200	PA4325-1	484-01	GT2S1	GP2-335-01	ST-4-01	TC-11	Driver Plate Bypass
45	150	500	MC60F-151	1468-00015	5W5T15	GP2K-150	MO.5-315	1FM-315	Tone Compensation
46	100	300	Note 1	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	1st IF Plate Bypass
47	100	300	Note 2	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Phono Tone Comp.
48	220	300	Note 3	1468-0002	5W5T2	GP2K-250	MO.5-32	1FM-32	Tone Compensation
49	330	500	MC60G331	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-33	RF Bypass
50	1000	300	PA4328-8	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	Diode Filter
51A	100	300	Note 4	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" "
B	100	300		1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Osc. Grid Cap.
52	51	300	CC30H-510K	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Osc. Anode Bypass
53	1000	300	PA4328-8	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	RF Coupling
54	5	300	PA4328-7	1468-000005	5W5V5	NP0K-5	MO.5-55	MS-55	Decoupling
55	1000	300	PA4328-8	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	RF Screen Bypass
56	1000	300	PA4328-8	1468-001	1W5D1	GP2L-001	MO.3-21	1FM-21	Fixed Trimmer
57	51	300	CC30H-510K	1469-00005	5R5Q5	NP0K-50	MOS.5-45	MS-45	RF Coupling
58	100	300	Note 5	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
110	470KΩ	½	BR12S-474	BTS-470K	Yl.-Vi.-Yl. " "
111	470KΩ	½	BR12S-474	BTS-470K	Yl.-Vi.-Yl. " "
112	220Ω	2	DR12S-221	BW-2-220	Red-Red-Br. Output Cathode
113	470Ω	2	DR12S-471	BW-2-470	Yl.-Vi.-Br. Filter
114	10Ω	½	AA6687-1	BW-½-10	Br.-Blk.-Blk. Series Dial Light
115	10Ω	½		BW-½-10	Br.-Blk.-Blk. " " "
116	10Ω	½		BW-½-10	Br.-Blk.-Blk. " " "

Note 1. Items 46 and 100 are combined in one unit obtainable under MFGRS Part No. PA4330-1.
Note 2. Items 47 and 97 are combined in one unit obtainable under MFGRS Part No. PA4330-3.
Note 3. Items 48 and 95 are combined in one unit obtainable under MFGRS Part No. PA4330-2.
Note 4. Items 51A and 51B and 83 are combined in one unit obtainable under MFGRS Part No. PA4329-1
Note 5. Items 58 and 64 are combined in one unit obtainable under MFGRS Part No. PA4330-1.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
117	117VAC @.84A	545VAC CT .108ADC	5VAC @ 2A	6.8VAC @ 4.2A	AB44011-1	P-6313‡ †	PV-120# †	P-2953#

† Drill new mounting holes.
# Add series resistor to reduce plate voltage.
‡ Use universal mounting brackets.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∽)	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
118	.108A	130Ω	5 Henries	AB47000-3				

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
119	7600Ω CT	6.8Ω	435Ω CT	.75Ω	AB44059-1	A-3852	RO-303	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
120	PM	3.4Ω	PC-63000-12		10A31	
121	PM	3.4Ω	PC-63000-12		10A31	
	CONE DIA.	V. C. DIA.				
122	9 1/2"	1"				
123	9 1/2"	1"				

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SPARTON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
59	150	500	MC60F-151	1468-00015	5W5T15	GP2K-150	M0.5-315	1FM-315	1st IF Plate Decoup. Note.

* Parallel sections to obtain desired capacity.
Note. Not used in all models.
Note 1. Item 46 and 100 are combined into one unit obtainable under MFGRS Part No. PA4330-1.
Note 2. Item 47 and 97 are combined into one unit obtainable under MFGRS Part No. PA4330-3.
Note 3. Item 48 and 95 are combined into one unit obtainable under MFGRS. Part No. PA4330-2.
Note 4. Item 51A, 51B and 83 are combined into one unit obtainable under MFGRS Part No. PA4329-1.
Note 5. Item 58 and 64 are combined into one unit obtainable under MFGRS Part No. PA4330-1.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SPARTON PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
60A	1 Meg.	½	PA4408-1	D18-137X	AM-63-Z	Volume control tapped @ 100KΩ
B	Shaft		Not Req.	E	KSS-3	Attach to 60A Per Instructions
61A	1 Meg.	½	PA4409-1	AT-103	D13-137	Tone control
B	Shaft		Not Req.	KSS-3	E	Attach to 61A Per Instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SPARTON PART No.	IRC PART No.	IDENTIFICATION CODES	
62	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl.	Ant. Loading
63	2200Ω	½	BR12S-222	BTS-2200	Red-Red-Red	" "
64	100KΩ	½	See Note 5	BTS-100K		RF Grid
65	68Ω	½	BR12S-680	BW-½-68	Blue-Gray-Blk.	RF Cathode
66	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl.	AVC Network
67	47KΩ	1	CR12S-473	BTA-47K	Yl.-Vi.-Or.	RF Screen Dropping
68	15KΩ	2	DR12S-153	BT-2-15K	Br.-Grn.-Or.	Converter Screen Dropping
69	22KΩ	1	CR12S-223	BTA-22K	Red-Red-Or.	Screen Bleeder
70	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or.	Osc. Grid
71	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn.	Tuning Ind. Plate Load
72	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl.	IF Trans. Shunt
73	10KΩ	½	BR12S-103	BTS-10K	Br.-Blk.-Or.	IF Trans. Shunt
74	10KΩ	½	BR12S-103	BTS-10K	Br.-Blk.-Or.	Converter Decoupling
75	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl.	AVC Network
76	68KΩ	½	BR12S-683	BTS-68K	Blue-Gray-Or.	1st IF Screen
77	330Ω	½	BR12S-331	BW-½-330	Or.-Or.-Br.	1st IF Cathode
78	4700Ω	½	BR12S-472	BTS-4700	Yl.-Vi.-Red	1st IF Plate Decoupling
79	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl.	AVC Network
80	68KΩ	½	BR12S-683	BTS-68K	Blue-Gray-Or.	2nd IF Screen
81	330Ω	½	BR12S-331	BW-½-330	Or.-Or.-Br.	2nd IF Cathode
82	4700Ω	½	BR12S-472	BTS-4700	Yl.-Vi.-Red	2nd IF Plate Decoupling
83	47KΩ	½	See Note 4	BTS-47K		Diode Filter
84	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl.	3rd IF Screen
85	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red	3rd IF Cathode
86	2.2 Meg.	½	BR12S-225	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network
87	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn.	" "
88	15KΩ	½	BR12S-153	BTS-15K	Br.-Grn.-Or.	Ratio Det. Diode Load
89	470KΩ	½	BR12S-474	BTS-470K	Yl.-Vi.-Yl.	AF Load
90	150KΩ	½	BR12S-154	BTS-150K	Br.-Grn.-Yl.	De-emphasis
91	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or.	Diode Load
92	470KΩ	½	BR12S-474	BTS-470K	Yl.-Vi.-Yl.	" "
93	47Ω	½	BR12S-470	BW-½-47	Yl.-Vi.-Blk.	Balancing
94	4700Ω	½	BR12S-472	BTS-4700	Yl.-Vi.-Red	3rd IF Decoupling
95	2.2 Meg.	½	See Note 3	BTS-2.2 Meg.		Tone Compensation
96	10KΩ	½	BR12S-103	BTS-10K	Br.-Blk.-Or.	" "
97	15 Meg.	½	See Note 2	BTS-15 Meg.		AF Grid Load
98	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl.	AF Plate Load
99	33KΩ	½	BR12S-333	BTS-33K	Or.-Or.-Or.	AF Plate Decoupling
100	100KΩ	½	See Note 1	BTS-100K		Tone Compensation
101	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or.	Tone Compensation
102	2700Ω	½	BR12S-272	BTS-2700	Red-Vi.-Red	Driver Cathode
103	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl.	Driver Plate Load
104	47KΩ	½	BR12S-473	BTS-47K	Yl.-Vi.-Or.	Inverter Plate Load
105	470KΩ	½	BR12S-474	BTS-470K	Yl.-Vi.-Yl.	Inverter Grid
106	47KΩ	½	BR12S-473	BTS-47K	Yl.-Vi.-Or.	Inverter Cathode
107	2700Ω	½	BR12S-272	BTS-2700	Red-Vi.-Red	" "
108	1500Ω	½	BR12S-152	BTS-1500	Br.-Grn.-Red	Output Grid
109	1500Ω	½	BR12S-152	BTS-1500	Br.-Grn.-Red	" "

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SPARTON PART No.	MEISSNER PART No.	
124	AM Loop Ant.		.2Ω	AC67008-2		
125	AM Loop Loading Coil		2Ω	AA6780-3		
126	SW. Ant.	2Ω	.2Ω	AA6758-7		
127	FM Dipole Ant.		0Ω			
128	FM Ant.	0Ω	0Ω	AA6767-8		
129	AM RF	70Ω	5Ω	AA6756-5		
130	SW RF	3.5Ω	1Ω	AA6760-6		
131	FM RF		0Ω	PA3234		
132	AM Osc.		9Ω	AA6752-6	14-1060	
133	SW Osc.		0Ω	AA6770-3		
134	FM Osc.		0Ω	AA6767-7		
135A	AM 1st IF	12Ω	11Ω**	AA6768-5		** Includes FM Sec. winding
B	FM 1st IF	1Ω				
136A	AM 2nd IF	10.5Ω§	10Ω**	AA6768-6		§ Includes FM Pri. winding.
B	FM 2nd IF					
137A	AM 3rd IF	11Ω§	10Ω	AA6768-7		
B	FM 3rd IF		1Ω			
138	Ratio Det.	1Ω	1Ω	AA6805-2		
139	RF Choke		0Ω	AA6798-2		

DIAL LIGHTS

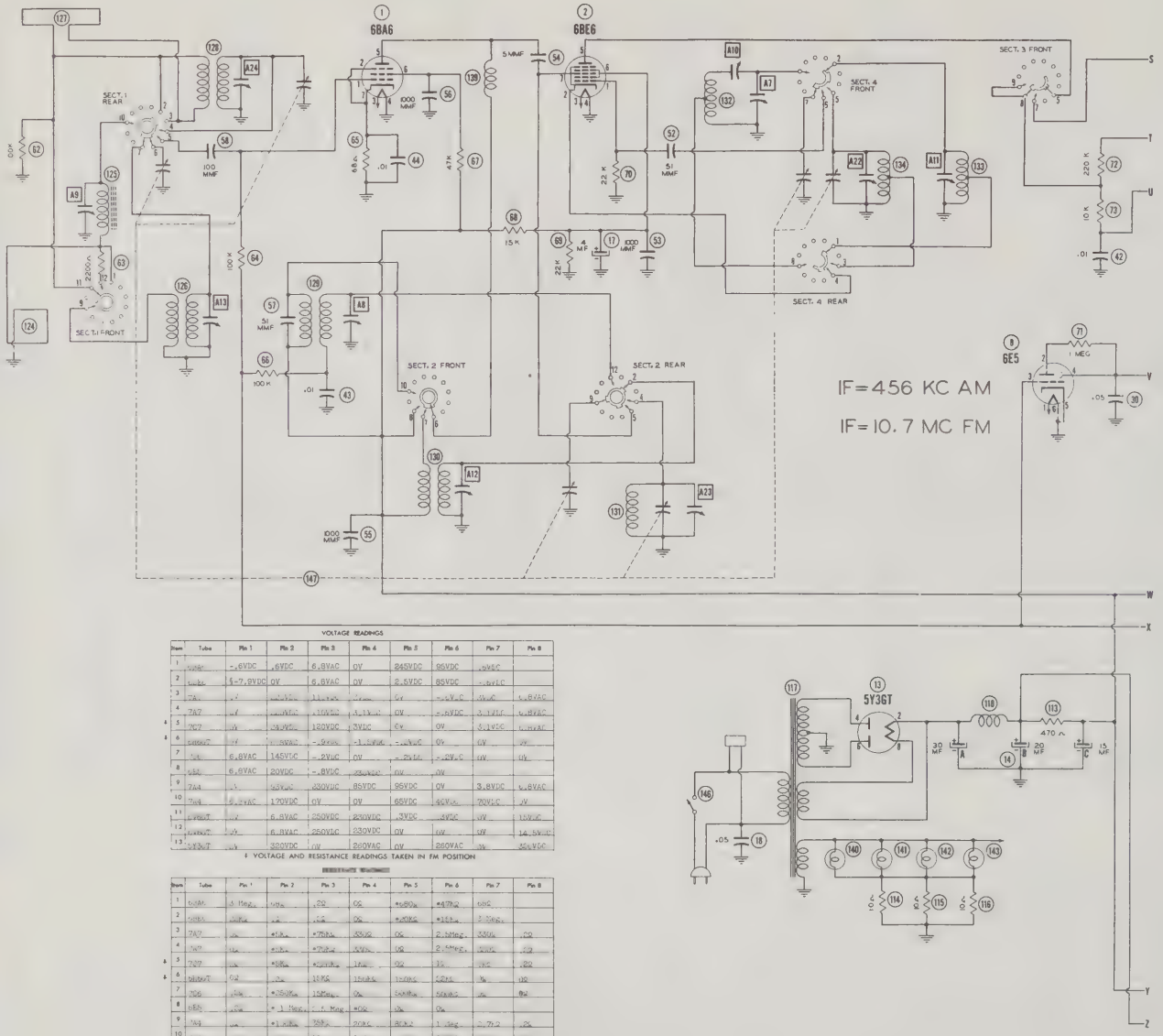
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SPARTON PART No.		NOTES
140	Bayonet	6-8V	0.15A	Brown			Type #47
141	Bayonet	6-8V	0.15A	Brown			Type #47
142	Bayonet	6-8V	0.15A	Brown			Type #47
143	Bayonet	6-8V	0.15A	Brown			Type #47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA SPARTON PART No.	ASTATIC PART No.	REMARKS
144		QT3-M	

MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
145	Switch	PB42006	Band
146	Switch	PA4607	Power
147	3 Gang Var. Cap.	PC65000	(16-502MMF, 15-505MMF, 15-362MMF)
A7 }	Dual Trimmer	AB43500-36	{ BC Osc. Adj.
A10 }			{ BC Osc. Adj. (Padder)
A8	Trimmer	PA4378-2	BC RF Adj.
A9	"	PA4378-2	BC Ant. Adj.
A11	"	PA4378-2	SW Osc. Adj.
A12	"	PA4378-2	SW RF Adj.
A13	"	PA4352-2	SW. Ant. Adj.
A22	"	PA4365-1	FM Osc. Adj.
A23	"	PA4365-1	FM RF Adj.
A24	"	PA4365-1	FM Ant. Adj.
	Dial and Base Assby.	AC67017-1	
	Knob	PA5623	Control
	Knob	PA5624	Band
	Dial Pointer	PA5406	



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.6VDC	.6VDC	6.8VAC	0V	245VDC	95VDC	.6VDC	
2	6BE6	5-7.8VDC	0V	6.8VAC	0V	2.5VDC	85VDC	-.6VDC	
3	7A7	1.7	[illegible]	11.4VAC	.7VDC	0V	-.4V DC	.4VDC	6.8VAC
4	7A7	.6V	-.4VDC	-100VDC	1.1VDC	0V	-.8VDC	3.1VDC	6.8VAC
5	7C7	.1V	.4VDC	120VDC	3VDC	0V	0V	3.1VDC	6.8VAC
6	6AB4T	.1V	-.5VDC	-.5VDC	-1.1VDC	-.4VDC	0V	0V	.1V
7	6K8	6.8VAC	145VDC	-.2VDC	0V	-.2VDC	-.2V DC	0V	0V
8	6K8	6.8VAC	20VDC	-.8VDC	23VDC	0V	0V		
9	7A9	.1	65VDC	230VDC	85VDC	95VDC	0V	3.8VDC	6.8VAC
10	7A9	6.8VAC	170VDC	0V	0V	65VDC	4GVDC	70VDC	.1V
11	6V6GT	.1V	6.8VAC	250VDC	230VDC	.3VDC	.5VDC	0V	11VDC
12	6X8GT	.1V	6.8VAC	250VDC	230VDC	0V	0V	0V	14.5VDC
13	5Y3GT	.1V	320VDC	0V	260VAC	0V	260VAC	0V	354VDC

* VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	3.1Meg.	440Ω	.2Ω	0Ω	*680Ω	*47KΩ	68Ω	
2	6BE6	265KΩ	2Ω	.1Ω	0Ω	*.2MEG	*43KΩ	2.5MEG.	
3	7A7	1MEG	*41KΩ	*75KΩ	55KΩ	0Ω	2.5Meg.	330Ω	.2Ω
4	7A7	1MEG	*43KΩ	*70KΩ	47KΩ	0Ω	2.5MEG.	330Ω	.2Ω
5	7C7	1MEG	*38KΩ	*600KΩ	1MEG	0Ω	1Ω	1KΩ	.2Ω
6	6AB4T	0Ω	.2Ω	18KΩ	12KΩ	1500Ω	12KΩ	1MEG	1KΩ
7	6K8	1MEG	*350KΩ	15MEG.	0Ω	640KΩ	50KΩ	1MEG	8KΩ
8	6K8	1MEG	* 1.1MEG	1.1 Meg.	*0Ω	0Ω	0Ω		
9	7A9	1MEG	*1.2MEG	75KΩ	20KΩ	800Ω	1.3Meg	2.7KΩ	.2Ω
10	7A9	1MEG	*46KΩ	1Ω	Inf.	47KΩ	500KΩ	100KΩ	2Ω
11	6V6GT	1MEG	2Ω	*340Ω	*500Ω	500Ω	470KΩ	1KΩ	220Ω
12	6X8GT	1MEG	.2Ω	*270Ω	*500Ω	460Ω	450KΩ	1KΩ	220Ω
13	5Y3GT	Inf.	36KΩ	Inf.	36Ω	Inf.	36Ω	Inf.	36KΩ

* Measured from pin 8 of 5Y3GT

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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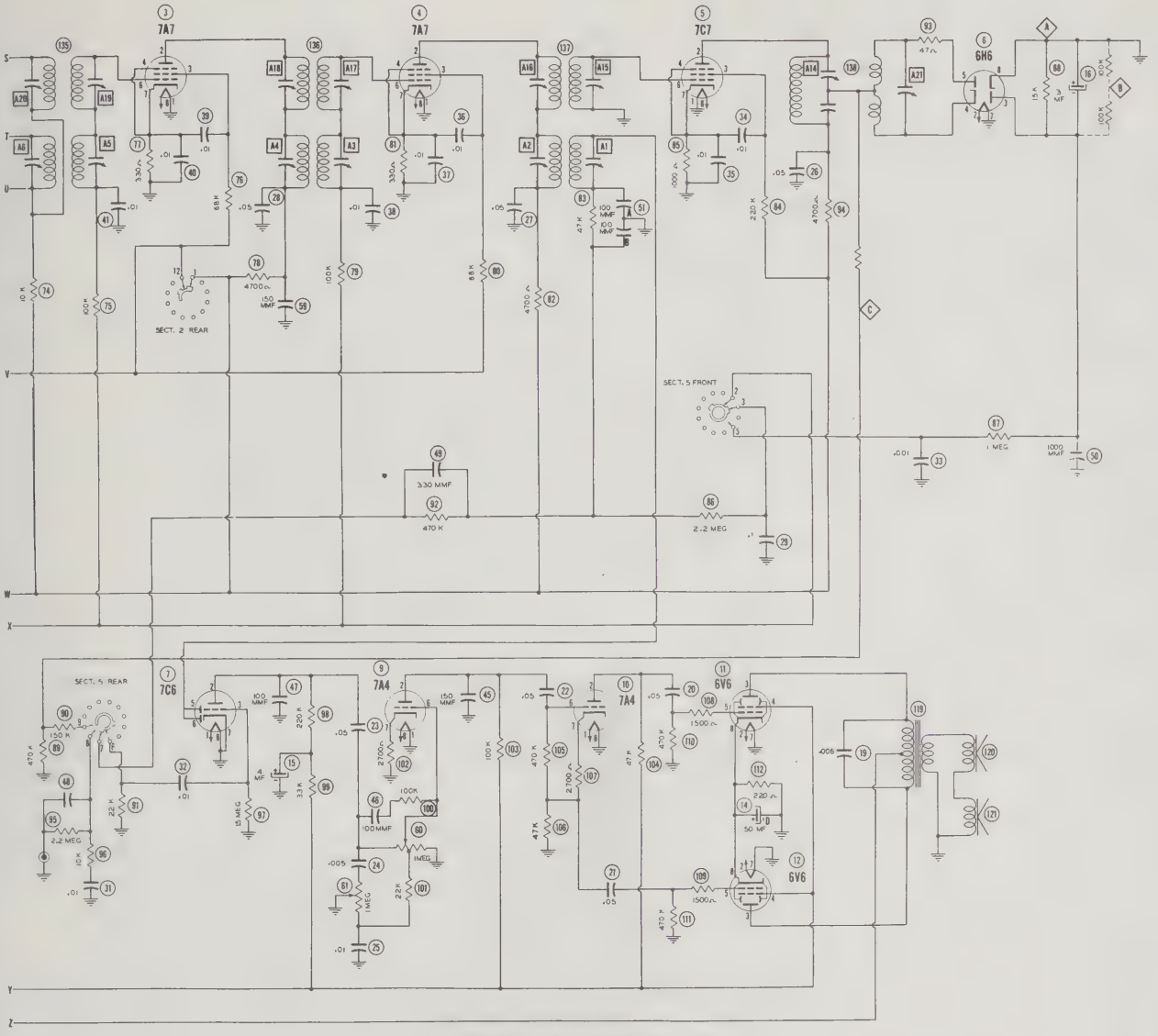

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The AM IF channel should be aligned first because of interaction of the FM and AM IF coils being in same cans.

To set dial pointer set pointer to 88MC mark with tuning gang capacitor fully closed.

The standard RMA dummy antenna used at some points in the alignment is as follows: a 200MMF capacitor in series with a 20 UH choke which is parallel by a 400MMF capacitor in series with a 100Ω resistor.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	RMA Dummy	High side to center AM section of tuning capacitor. Low side to chassis.	456KC	BC Position 2 (Left to Right)	Tuning cap. fully open.	Across Voice Coil	A1, A2 A3, A4 A5, A6	Adjust for maximum output.
2.	RMA Dummy	High side to green lead connecting to Loop Antenna. Low side to chassis.	1600KC	"	1600KC	"	A7	" " " "
3.	RMA Dummy	"	1400KC	"	Tune for maximum output.	"	A8, A9	" " " "
4.	RMA Dummy	"	600KC	"	600KC	"	A10	Adjust for maximum output. Check calibration at 600KC, 1000KC & 1400KC.
5.	RMA Dummy	High side to one of FM Ant. terminals. Low side to chassis.	16MC	SW (Extreme clockwise position)	16MC	"	A11	Adjust for maximum output.
6.	RMA Dummy	"	16MC	"	16MC	"	A12, A13	Adjust for maximum output. Check calibration at 8MC, 10MC and 16MC.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Before starting step 11 connect 2 matched 100KΩ (±5%) carbon resistors connected in series across the stabilizing capacitor (Item 16). Connect the DC Probe of the VTVM to the junction of the two resistors (point B) and the common lead of the VTVM point C on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	5000MMF	High side to pin 6 7C7 (V5). Low side to chassis.	10.7MC (No mod)	FM (3rd position Left to right)	Point of non-Interference	DC Probe to point (A) Common to chassis.	A14	Adjust for maximum deflection.
8.	5000MMF	High side to pin 6 7A7 (V4). Low side to chassis.	"	"	"	"	A15, A16	Shunt grid to ground of 7C7 (V5) with 15KΩ carbon resistor. Adjust A15, A16 for maximum deflection. Leave shunt connected.
9.	5000MMF	High side to pin 6 7A7 (V3). Low side to chassis.	"	"	"	"	A17, A18	Shunt grid to ground of 7A7 (V4) with another 15KΩ carbon resistor. Adjust A17, A18 for maximum deflection. Leave shunts connected.
10.	5000MMF	High side to center FM section of tuning capacitor. Low side to chassis.	"	"	"	"	A19, A20	Shunt grid to ground of 7A7 (V3) with 15KΩ carbon resistor. Adjust A19, A20 for maximum deflection. Remove three 15KΩ shunts.
11.	5000MMF	High side to center FM section of tuning capacitor. Low side to chassis.	"	"	"	DC Probe to Point (B) Common to point (C)	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
7.	5000MMF	High side to pin 6 7A7 (V4.) Low side to chassis.	10.7MC (450KC Sweep)	FM	Point of non-interference.	Vert. Amp to Point (A) Low side to chassis.	A14, A15, A16	Disconnect stabilizing capacitor (16). Adjust for maximum amplitude & symmetry as per Fig 1.
8.	5000MMF	High side to pin 6 7A7 (V3). Low side to chassis.	"	"	"	"	A17, A18	Adjust for maximum amplitude & symmetry as per Fig 2.
9.	5000MMF	High side to center FM section of tuning cap. Low side to chassis.	"	"	"	"	A19, A20	"
10.	5000MMF	"	"	"	"	Vert. Amp to Point (C) Low side to chassis.	A21	Reconnect stabilizier capacitor. Adjust A21 for correct crossover point as per Fig. 3. If necessary slightly retouch A14 for maximum amplitude & straightness of crossover lines. Continue with step 12.

OSCILLATOR & RF AMP. ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Two 150Ω carbon res.	Across FM Ant. Terminals.	108MC	FM	108MC	DC Probe to Point (A) Common to chassis.	A22	Adjust for maximum deflection
13.	Two 150Ω carbon res.	"	"	"	"	"	A23, A24	Adjust for maximum deflection. Check calibration at 88MC and 100MC.

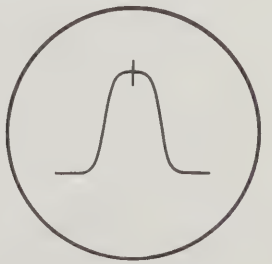


FIG. 1

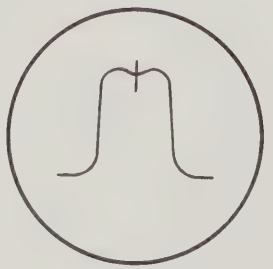


FIG. 2

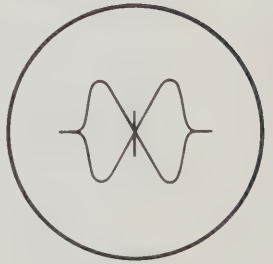


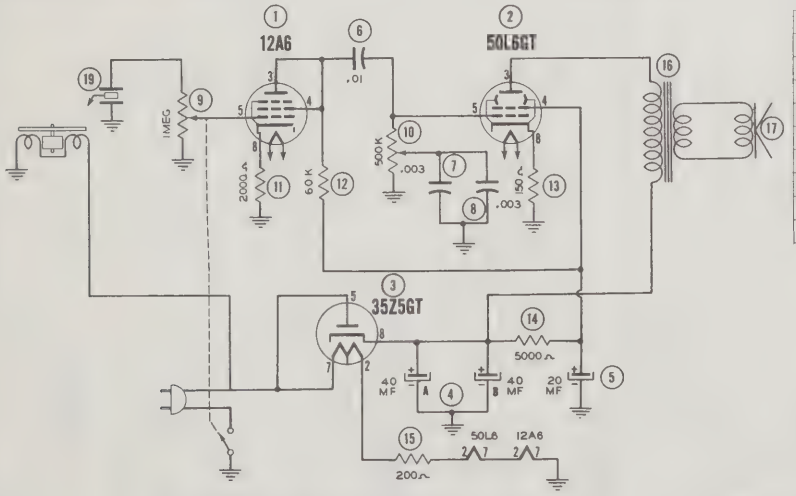
FIG. 3

SUPREME, MODEL 733

TRADE NAME Supreme, Model 733
MANUFACTURER Aim Industries Inc., 41 Union Square, New York3, New York
TYPE SET AC Operated Phono Player with 3 Tube Amplifier.
TUBES (THREE) Types 12A6 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier

POWER SUPPLY 110-120 Volts AC
TUNING RANGE—BROADCAST

RATING .21 Amp. @ 117 Volts AC
SHORT WAVE



Pin No.	12A6 Volt.	12A6 Res.	50L6GT Volt.	50L6GT Res.
1	2.6VDC	2KΩ	0V	INF
2	11VAC	12Ω	55VAC	60Ω
3	35VDC	100KΩ	108VDC	40KΩ
4	35VDC	100KΩ	110VDC	45KΩ
5	0V	1 Meg.	0V	500KΩ
6	0V	INF	0V	INF
7	0V	0Ω	11VAC	12Ω
8	2.6VDC	2KΩ	.8VDC	150Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V	INF
2	95VAC	275Ω
3	95VAC	290Ω
4	0V	INF
5	117VAC	310Ω
6	0V	INF
7	117VAC	310Ω
8	138VDC	40KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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498-19

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 4/49 498-19 SET #60 FOLDER 19

SUPREME
MODEL 733

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SUPREME PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	AF Amp.	12A6	12A6	7AC	
2.	Power Output	50L6GT	50L6GT	7AC	
3.	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SUPREME PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	40	150		PRSA150/40-40	EDL-4415	M-2X40-150	TA440	Filter Red
4B	40	150						Filter Green
5	20	150		PRS150/20	BR2015	M-20-150	UT-201	Filter
6	.01	600		684-01	GT6S1	ST-6-01	TC-11	Audio Coupling
7	.003	400		484-003	GT6D3	ST-6-003	TC-23	Tone Compensation
8	.003	400		484-003	GT6D3	ST-6-003	TC-23	Tone Compensation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SUPREME PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
9A	1 Meg.	½		D13-137	M-63-Z	Volume Control
9B	Shaft			A	Not Req.	Attach to 9A Per Instructions
9C	Switch			41	SW-A	Attach to 9A Per Instructions
10A	500KΩ	½		D13-133	M-60-Z	Tone Control
10B	Shaft			A	Not Req.	Attach to 10A Per Instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SUPREME PART No.	IRC PART No.	IDENTIFICATION CODES	
11	2000Ω	½		BTS-2200	Red-Blk.-Red	AF Cathode
12	60KΩ	½		BTS-56K	Blue	AF Plate Load
13	150Ω	½		BW-½-150	Br.-Grn.-Br.	Output Cathode
14	5000Ω	½		BTS-4700	Grn.-Blk.-Red	Filter
15	200Ω	10		AB-200		Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SUPREME PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
16	5000Ω	3.5Ω	650Ω	.7Ω		A-3877#	T22S46#	A-2930#	#Bend mounting tabs down file out slots and mount on original bracket.

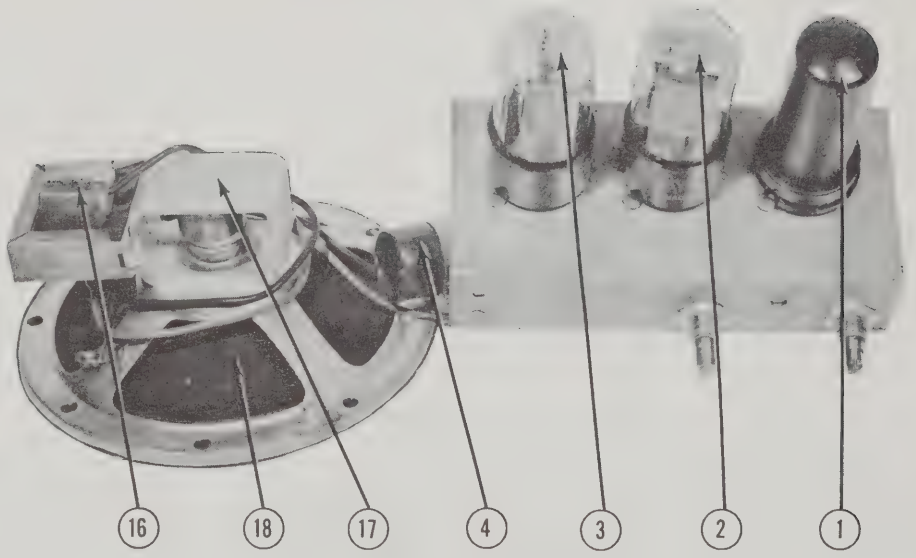
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SUPREME PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V C IMP		ST-105 MOD PS-X	5A15	
17	PM	3.5Ω				
	CONE DIA	V C DIA				
18	4 11/16"	9/16"				

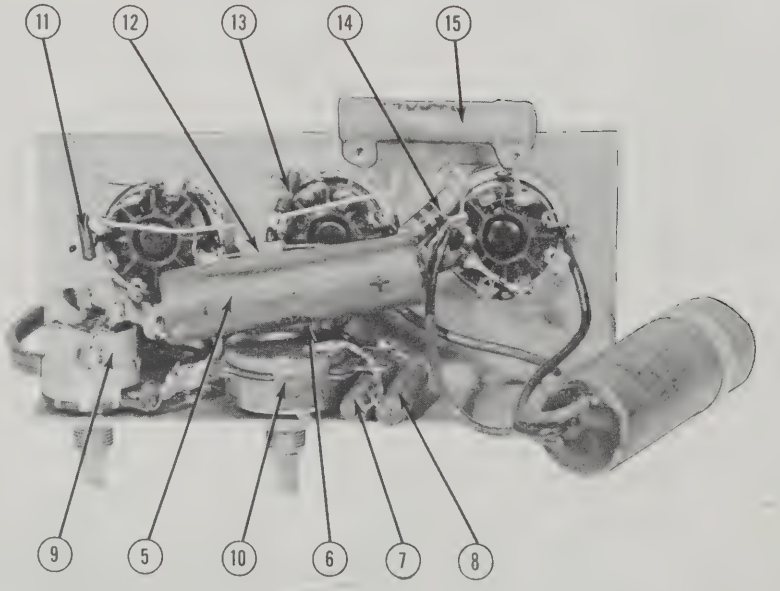
PHONO CARTRIDGE

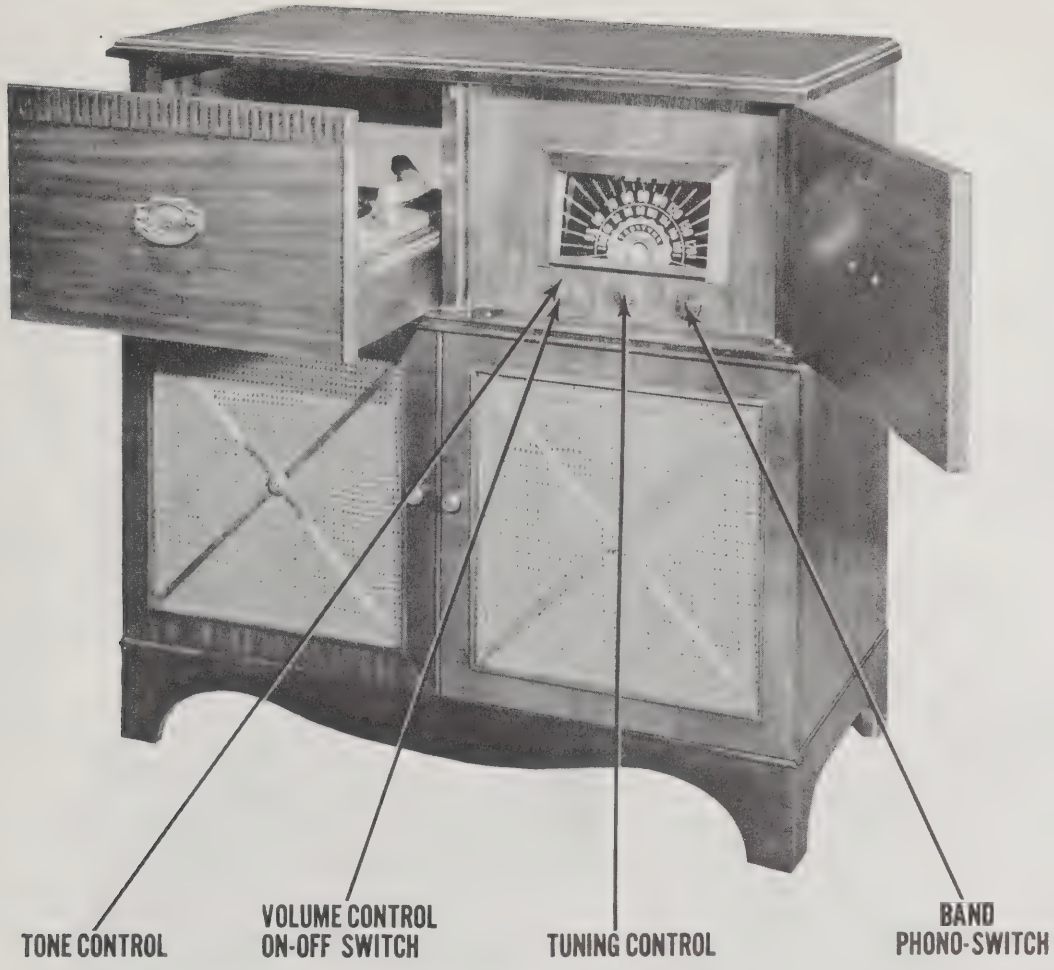
ITEM No.	REPLACEMENT DATA: SUPREME PART No.	ASTATIC PART No.	REMARKS
19		GT2-M	

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





TRUETONE, MODEL D1949

TRADE NAME Truetone, Models D1949, D1952

SUPPLIER Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.

TYPE SET AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Ant.

TUBES (EIGHT) Types 6AG5 RF Amp., 12AT7 Converter, 6BA6 1st IF Amp., 6BA6 FM 2nd IF Amp., 6AL5 FM DET-AVC- 6SQ7 AM DET-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier

POWER SUPPLY 105-125 Volts AC RATING .65 Amp. @ 117 Volts AC

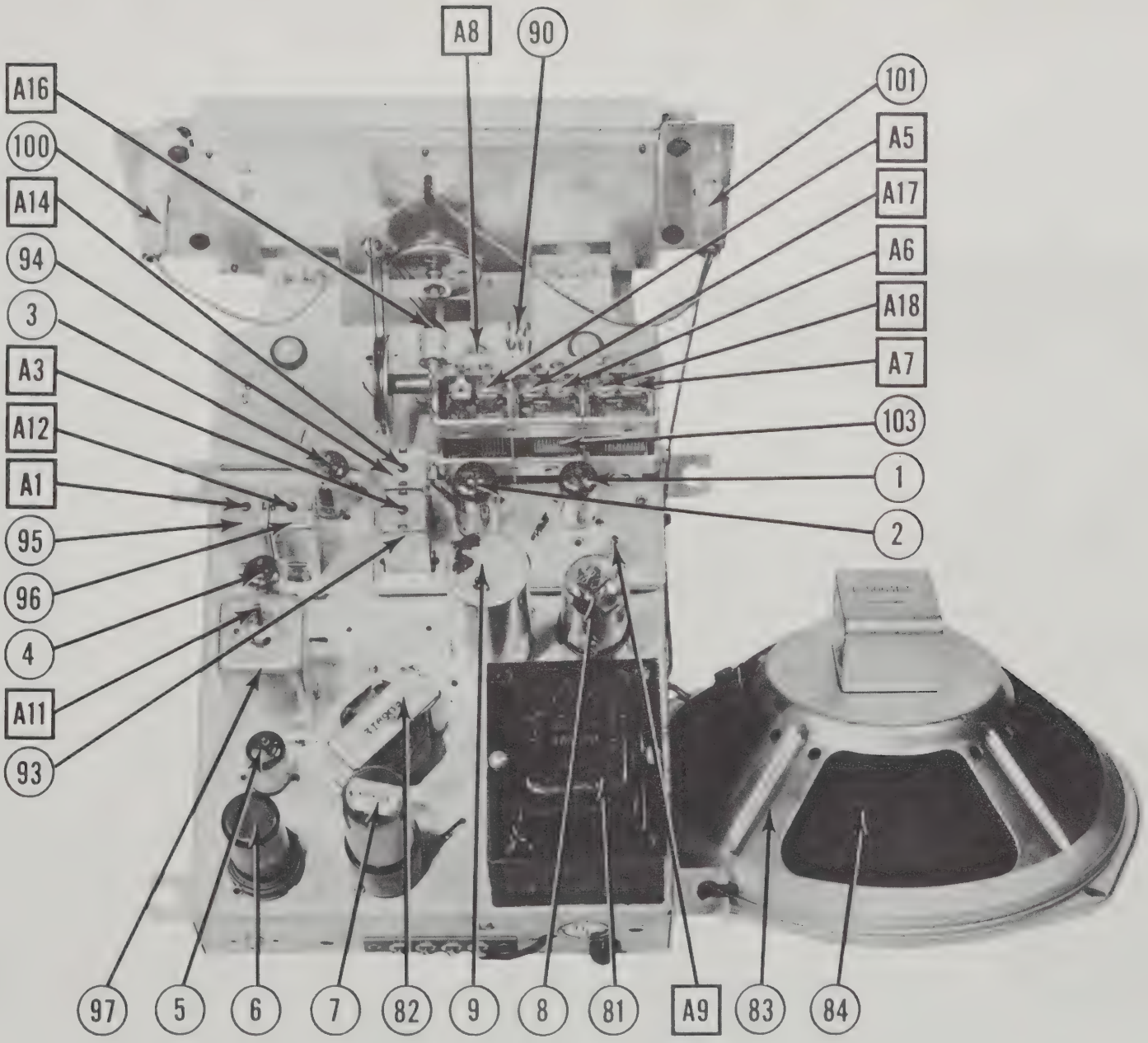
TUNING RANGE-BROADCAST 540-1700KC FREQ. MOD. 88-108 MC

TRUETONE
MODELS D1949, D1952

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1949 by Howard W. Sams & Co., Inc., Indianapolis 7, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

DATE 4/49 498-20 SET #60 FOLDER 20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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6AG5	6AG5	7BD	
2	Converter	12AT7	12AT7		
3	1st IF Amp.	6BA6	6BA6	7BK	
4	FM 2nd IF Amp.	6BA6	6BA6	7BK	
5	FM DET-AVC	6AL5	6AL5	6BT	
6	AM DET-AVC-AF	6SQ7	6SQ7	8Q	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	450	505908	AF862J4A	UP43145C		DY-406	EL-424	◓ Filter.
B	30	450							◘ Filter.
C	10	450							▲ Filter.
D	20	25							Cathode Bypass.
10	5	50	504937	PRS150-4	BR415		M-4-450	TA-55	Stabalizing Cap.
11	.01	600	512256	684-01	GT6S1		ST-6-01	TC-11	Line Filter.
12	.005	600	512006	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Output Plate Bypass.
13	.02	400	512016	484-02	GT4S2		ST-4-02	TC-12	Audio Coupling.
14	.005	500	512006	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Audio Coupling.
15	.005	600	512006	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Audio Coupling.
16	.1	400	512034	484-1	GT4P1		ST-4-1	TC-1	AF Plate Decoupling.
17	.005	600	512006	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	Tone Compensation.
18	.005	600	512006	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
19	.003	600	512004	684-003	GT6D3	GP2M-003	ST-6-003	TC-23	De-emphasis.
20	.05	200	512026	484-05	GT2S5		ST-4-05	TC-15	AVC Filter.
21	.01	400	512009	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Cathode Bypass.
22	100	500	506340	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AF Plate Bypass.
23	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Tone Compensation.
24	330	500	506341	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-33	FM Det.Diode RF Filter.
25	100	500	506340	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" " " " "
26	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
27	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Plate Decoupling.
28	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Screen Bypass.
29	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
30A	100	400	Note	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	AM Diode RF Filter.
B	100	400	"	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	" " " "
31	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter.
32	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Plate Decoupling.
33	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Screen Bypass.
34	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Filament Bypass.
35	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter.
36	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Conv. Plate Decoupling.
37	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Bypass Pwr. Supply.
38	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Oscillator Feedback.
39	10	300	506544	1468-00001	5W5Q1	GP1K-10	MO.5-41	1FM-41	" "
40	10	300	513429	1469-00001	5R5Q1	GP1K-10	MOS.5-41	MS-41	Osc. Feedback. ± 10%.
41	330	500	506341	1468-00035	5W5T3	GP2K-300	MO.5-33	1FM-33	Osc. Feedback.
42	39	500	513409	1469-00004	5R5Q4	GP1K-50	MOS.5-44	MS-44	Osc. Grid Cap. ± 5%
43	1	300	504983	1468-000001					Osc. Coupling.
44	5	500	504905	1469-000005	5R5V5	NP0K-5	MOS.5-55	MS-55	RF Coupling. ± 10%.
45	47	400	504974	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	Fixed Trimmer.
46	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Plate Decoupling.
47	5000	450	505873	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	RF Screen Bypass.
48	47	400	504974	1468-00005	5W5Q5	GP1K-50	MO.5-45	1FM-45	RF Cathode Bypass.
49	22	500	504973	1468-000025	5W5Q2	GP1K-25	MOS.5-42	MS-42	RF Coupling.

Note: Items number 30A & B and 61 are combined into one unit obtainable under Mfgrs. pt. # 506338.

DATE 4/49 498-20 SET #60 FOLDER 20

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: VC IMP.	REPLACEMENT DATA: TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
83	PM	3.65Ω	C-506464	ST-120 † MOD P10-S	10A31	† Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	VC DIA.				
84	9 3/8"	3/4"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
85	Loop Ant.		.1Ω		
86	FM Dipole		0Ω	506821	
87	BC Ant.Coil	.3Ω	2.5Ω	506354	14-1056
88	FM Ant.Coil		0Ω	506353	
89	BC RF Coil	85Ω	3.6Ω	506345	14-1057
90	FM RF Coil		0Ω	506351	
91	BC Osc.Coil		9.5Ω	506335	
92	FM Osc.Coil		0Ω	506352	
93	1st IF AM	10Ω	10Ω	506333	
94	1st IF FM	.7Ω	.7Ω	506080	
95	2nd IF AM	13Ω	13Ω	505797	
96	2nd IF FM	2Ω	.5Ω	505905	
97	FM Ratio Det	1.2Ω	.2Ω	506332	
98	FM RF Plate Choke		1.5Ω	506337	
99	Fil. Choke		.2Ω	505075	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA:	NOTES
100	Bayonet	6-8V	0.15A	Brown	118921		Type # 47
101	"	6-8V	0.15A	"	118921		" 47

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
102	Switch	506347	Band.
103	3 Gang Var. Cap.	506348	(23-524MMF, 30-524MMF, 16-192MMF)
	Dial Scale	506552	
	Cabinet	506551	
	Knob	506659	Band.
	"	506654	Tone.
	"	506655	Volume.
	"	506656	Tuning.
	Dial Pointer	506618	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA			INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	
50A B	2 Meg. 200KΩ	½ ½	506616			Volume control and switch tapped @ 400K. Tone control ganged together.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES	
	RESISTANCE	WATTS	TRUETONE PART No.	IRC PART No.		
51	47KΩ	½	510067	BTS-47K	Yl.-Vl.-Or.	RF Grid.
52	82Ω	½	510017		Gray-Red-Blk.	RF Cathode.
53	33KΩ	½	510164	BTS-33K	Or.-Or.-Or.	RF Screen.
54	1000Ω	½	510137	BTS-1000	Br.-Blk.-Red.	RF Plate Load.
55	1800Ω	½	510041	BTS-1800	Br.-Gray-Red.	Converter Cathode.
56	1000Ω	½	510137	BTS-1000	Br.-Blk.-Red.	Converter Plate Decoupling.
57	10KΩ	½	510055	BTS-10K	Br.-Blk.-Or.	Oscillator Grid.
58	1000Ω	½	510137	BTS-1000	Br.-Blk.-Red.	Oscillator Plate.
59	39KΩ	½	510165	BTS-39K	Or.-White-Or.	1st IF Screen.
60	1000Ω	½	510137	BTS-1000	Br.-Blk.-Red.	1st IF Plate Decoupling.
61	47KΩ	½	Note	BTS-47K	Yl.-Vl.-Or.	Diode Filter.
62	470KΩ	½	610085	BTS-470K	Yl.-Vl.-Yl.	Diode Load.
63	2.2 Meg.	½	510093	BTS-2.2 Meg.	Red-Red-Grn.	AVC Network.
64	39KΩ	½	510165	BTS-39K	Or.-White-Or.	2nd IF Screen.
65	1000Ω	½	510137	BTS-1000	Br.-Blk.-Red.	2nd IF Plate Decoupling.
66	18KΩ	½	510059	BTS-18K	Br.-Gray-Or.	De-emphasis.
67	8200Ω	½	510053	BTS-8200	Gray-Red-Red.	Ratio Detector Diode Load.
68	8200Ω	½	510053	BTS-8200	Gray-Red-Red.	" " " "
69	220KΩ	½	510079	BTS-220K	Red-Red-Yl.	Series Phono.
70	68KΩ	½	510070	BTS-68K	Blue-Gray-Or.	Tone Compensation.
71	68KΩ	½	510070	BTS-68K	Blue-Gray-Or.	" "
72	15 Meg.	½	510098	BTS-15Meg.	Br.-Grn.-Blue.	AF Grid.
73	2.2 Meg.	½	510093	BTS-2.2 Meg.	Red-Red-Grn.	AF Plate Load.
74	220KΩ	½	510079	BTS-220K	Red-Red-Yl.	AF Plate Decoupling.
75	470KΩ	½	510085	BTS-470K	Yl.-Vl.-Yl.	Output Grid.
76	330Ω	½	510128	BW-½-330	Or.-Or.-Br.	Output Cathode.
77	47Ω	½	510013	BW-½-47	Yl.-Vl.-Blk.	Parasitic Suppressor.
78	600Ω	5	510709	AB-600		Filter.
79	600Ω	5	510709	AB-600		Filter.
80	2.2 Meg.	½	510093	BTS-2.2 Meg.	Red-Red-Grn.	AVC Filter.

Note: Items #61 and 30A & B are combined into one unit obtainable under Mfgrs. Pt. #506338.

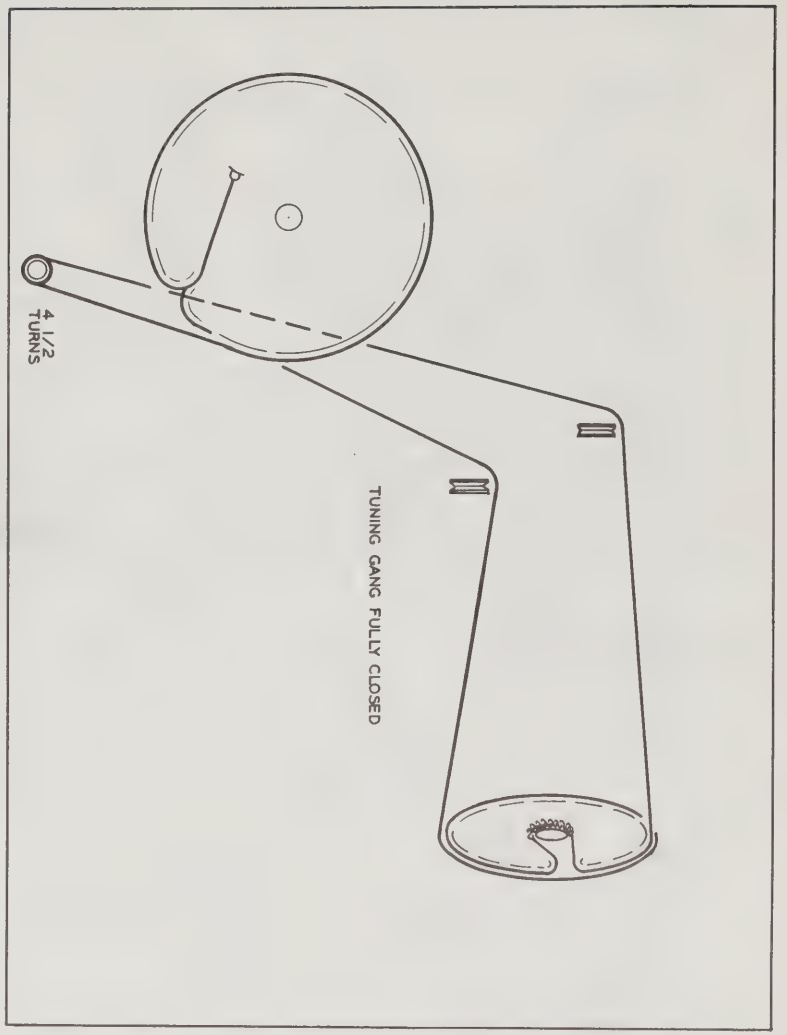
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.
81	117 VAC @ .65A	660 VCT .093 ADC	5.4 VAC @ 2.0A	6.8 VAC @ 2.5A	506709	P-6012 #	PH-90 #	P-2952 #

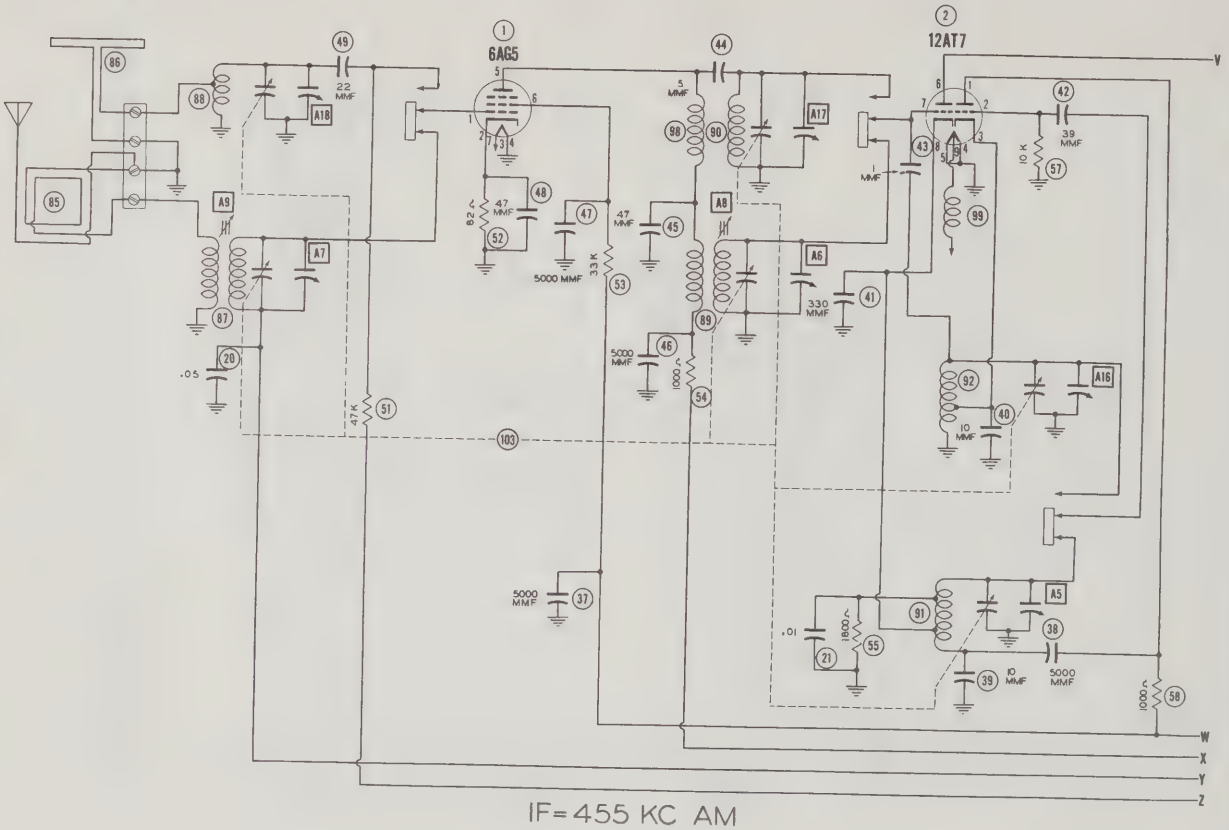
Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	CHICAGO PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
82	5400Ω	3.65Ω	525Ω	.4Ω	505912	A-3849	RO-9 ‡	A-2902	‡ Drill one new mounting hole.



DIAL CORD DRIVE



IF = 455 KC AM

IF = 10.7 MC FM

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AG5	-1VDC	.6VDC	0V	6.6VAC	225VDC	170VDC	.6VDC		
2A	12AT7	230VDC	§-13VDC	0V	0V	0V	235VDC	0V	5.6VDC	6.8VAC
‡2B	12AT7	230VDC	§-3.2VDC	0V	0V	0V	235VDC	0V	5.9VDC	6.8VAC
3	6BA6	-1VDC	0V	0V	6.6VAC	230VDC	100VDC	0V		
‡4	6BA6	-.8VDC	0V	0V	6.8VAC	235VDC	90VDC	0V		
‡5	6AL5	-1VDC	-.5VDC	0V	6.8VAC	0Ω	0V	-1VDC		
6	6BQ7	0V	-.7VDC	0V	0V	-.6VDC	50VDC	0V	6.6VAC	
7	6V6GT	0V	6.8VAC	250VDC	240VDC	0V	0V	0V	12VDC	
8	5Y3GT	0V	330VDC	0V	330VAC	0V	330VAC	0V	330VDC	

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6AG5	2.7 Meg	82Ω	0Ω	.1Ω	100KΩ	130KΩ	82Ω		
2A	12AT7	100KΩ	10KΩ	0Ω	0Ω	0Ω	100KΩ	3.6Ω	1.8KΩ	.1Ω
‡2B	12AT7	100KΩ	10KΩ	0Ω	0Ω	0Ω	100KΩ	0Ω	1.8KΩ	.1Ω
3	6BA6	2.7 Meg	0Ω	0Ω	.1Ω	100KΩ	140KΩ	0Ω		
‡4	6BA6	2.2 Meg	0Ω	0Ω	.1Ω	100KΩ	140KΩ	0Ω		
‡5	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	20KΩ		
6	6BQ7	0Ω	15 Meg	0Ω	0Ω	520KΩ	2.5 Meg	0Ω	.1Ω	
7	6V6GT	0Ω	.1Ω	100KΩ	100KΩ	470KΩ	INF	0Ω	330Ω	
8	5Y3GT	INF	100KΩ	INF	100Ω	INF	95Ω	INF	100KΩ	

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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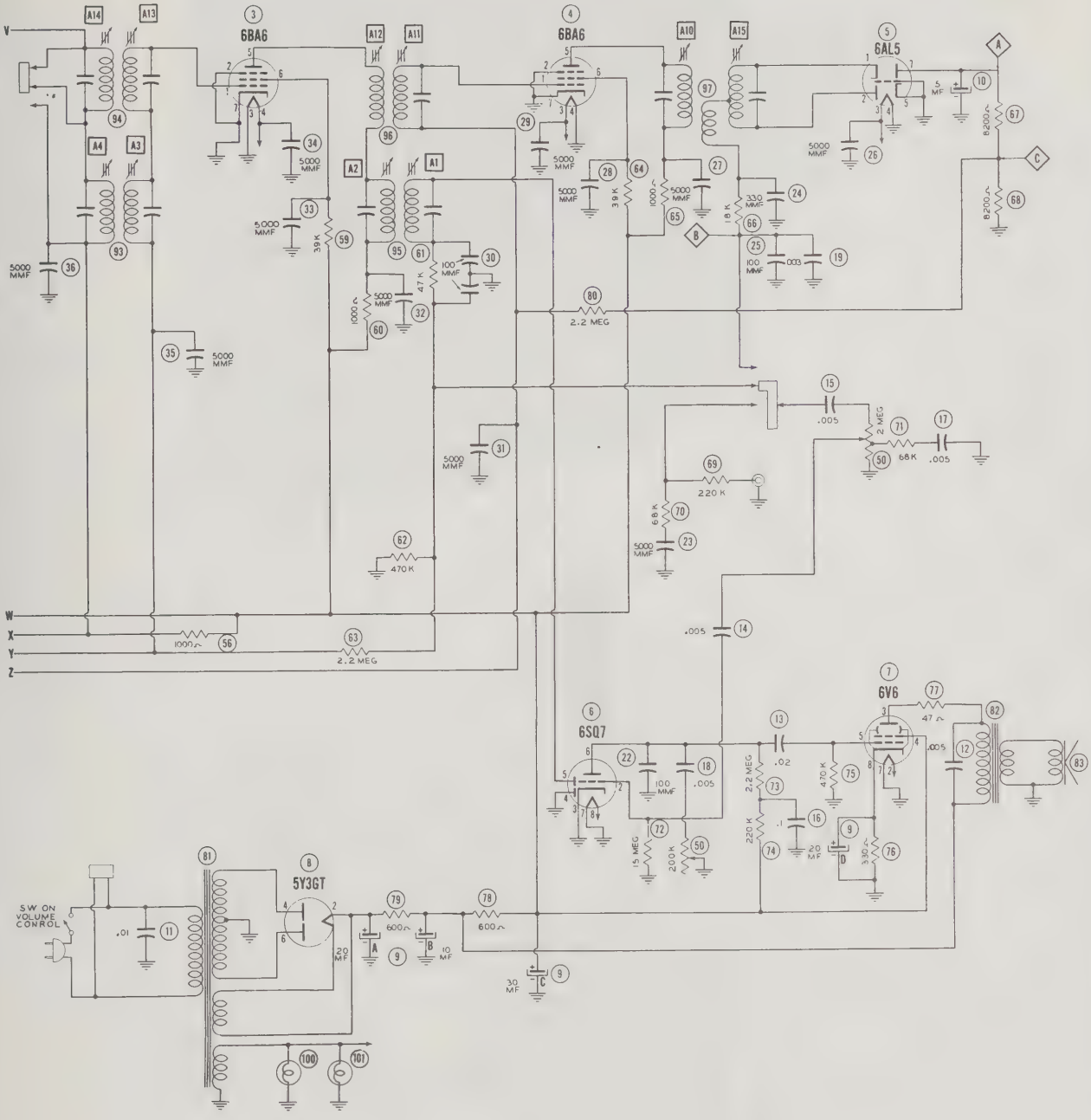

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial.

If alignment of both AM and FM channels is required it is necessary to align the AM channel first.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to pin 7(Grid) of 12AT7. Low side to chassis.	455KC	Center position	Tuning cap. fully open.	Across voice coil	A1,A2 A3,A4	Adjust for maximum output.
2	260 MMFD	High side to external antenna clip. Low side to chassis.(Loop must be connected).	1500KC	"	1500KC	"	A5	" "
3	260 MMFD	" "	1500KC	"	Tune for max. output.	"	A6,A7	" "
4	260 MMFD	" "	600KC	"	"	"	A8,A9	" "

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Dress FM circuit leads as short and straight as possible, particularly those in the oscillator circuit. IF plate and grid leads should also be kept short and straight.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.01 MFD	High side to pin 7(Grid) of 12AT7. Low side to chassis.	10.7MC (400 ∿ Amp. Mod.)	Fully counter-clockwise.	Tuning cap. fully open.	Connect DC probe to point (A) Common to chassis.	A10 A11 A12 A13 A14	Adjust for maximum deflection.
6	.01 MFD	High side to pin 7(Grid) of 12AT7. Low side to chassis.	10.7MC (400 ∿ Amp. Mod.)	Fully counter-clockwise.	Tuning cap. fully open.	DC probe to point (B) Common to point (C)	A15	Adjust for zero deflection. Note that as A15 is rotated a point will be found where the deflection will be from positive to negative or vice versa. This is a critical adjustment and misalignment will lead to distortion of FM signals.
7	300Ω carbon resistor	High side to ungrounded FM ant. terminal. Low side to chassis.	106MC (400 ∿ Amp. Mod.)	"	106MC	DC probe to point (A) Common to chassis	A16	Adjust for maximum deflection. The 106MC signal will be received at two different settings of A16. Select the setting which is nearest the low capacity end of its range.(See prealignment notes.)
8	300Ω carbon resistor	High side to ungrounded FM ant. terminal. Low side to chassis.	106MC (400 ∿ Amp. Mod.)	Fully counter-clockwise.	Tune for max. deflection.	DC probe to point (A) Common to chassis	A17 A18	Adjust for maximum deflection.
9	300Ω carbon resistor	"	"	"	"	"	A13, A14	Recheck for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

If the internal sawtooth generator (120∿) of the scope is used for horizontal deflection, a pattern similar to that of Fig.1 should be obtained. If the properly phased 60∿ sine wave sync voltage from the FM signal generator is used for horizontal deflection, a pattern similar to that in Fig.2 should be obtained.

Use frequency modulated signal with 60∿ modulation and 400KC sweep.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
5	.01 MFD	High side to pin 7(Grid) of 12AT7. Low side to chassis.	10.7MC (Freq.Mod.)	Fully counter-clockwise.	Tuning cap. fully open.	Vertical input to point (B) Ground to chassis.	A15	Adjust A10 thru A14 for maximum output audibly. Adjust A15 for centering of B on pattern per Fig. 1 or Fig.2 depending on type of sweep used.
6	.01 MFD	"	"	"	"	"	A10,A11 A12,A13 A14	Adjust for maximum amplitude and steepness of that portion of the curve between A & C per Fig.1 or Fig.2.
7	300Ω carbon resistor	High side to ungrounded FM ant. terminal. Low side to chassis.	106MC (Freq.Mod.)	"	106MC	"	A16	Adjust for centering of point B of pattern per Fig.1 or Fig.2.
8	300Ω carbon resistor	"	"	"	Tune to center point B.	"	A17,A18	Adjust for maximum amplitude of pattern per Fig.1 or Fig. 2.
9	300Ω carbon resistor	"	"	"	"	"	A13, A14	Recheck for maximum amplitude of pattern per fig. 1 or fig. 2.

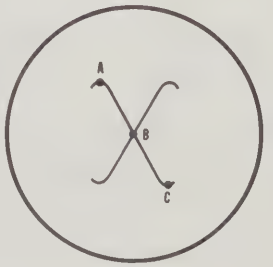


FIG. 1

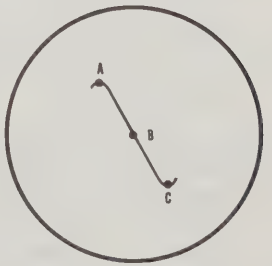
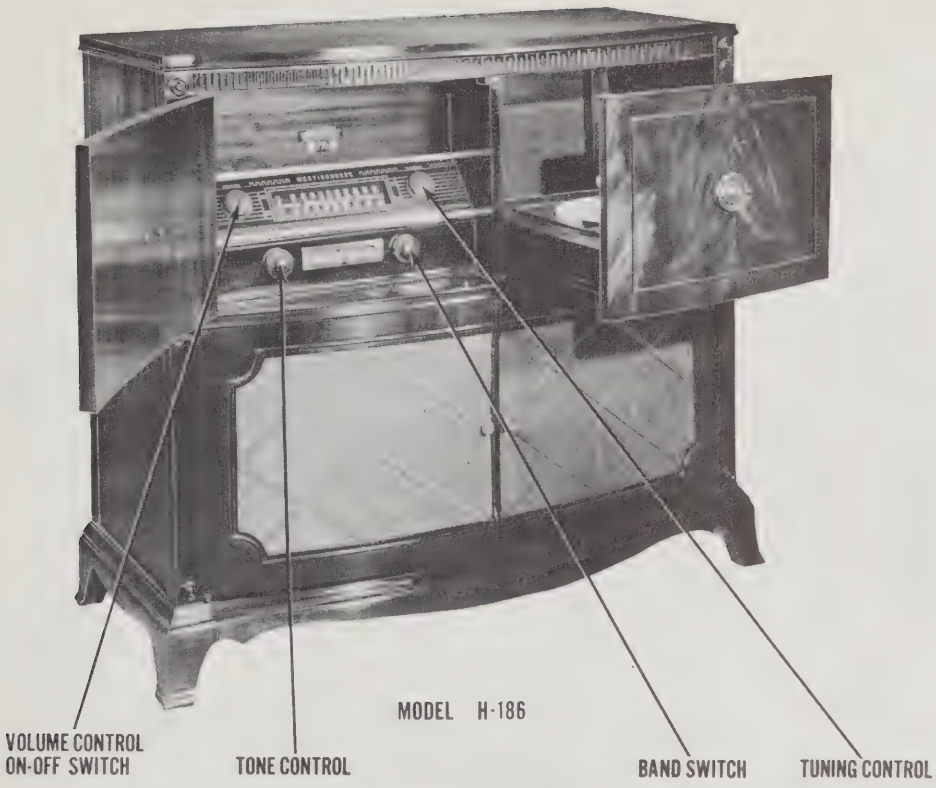


FIG. 2

PHOTOFACT* Folder

*TRADE MARK

WESTINGHOUSE
MODELS H-186M, H-187 (Ch. V-2132)



MODEL H-186

WESTINGHOUSE
MODELS H-186M, H-187 (Ch. V-2132)

WESTINGHOUSE MODEL H-186

TRADE NAME	Westinghouse, Models H-186, H-187 (Ch. V-2132)
MANUFACTURER	Westinghouse, Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	AC Operated Combination Phono-Radio, AM-FM Superheterodyne Receiver with Loop Antenna.
TUBES(TWELVE)	Types 7F8 FM RF Amp,. 7F8 Converter, 6BA6 1st IF Amp., 6BA6 2nd IF Amp., 6AU6 Limiter, 6H6GT FM Detector, 6SC7 Phono Pre-Amp., 6AT6 AM DET-AVC-AF, 6AT6 Phase Inv., (2) 6Y6G Power Output, 5U4G Rectifier.
POWER SUPPLY	105-120 Volts AC RATING 1.25 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1600KC FREQ. MOD. 88-108MC

PUSHBUTTON ADJUSTMENT

Freq. ranges from left to right in order are 540-900KC, 540-900KC, 540-900KC, 900-1600KC, 900-1600KC, and 900-1600KC.

1. Turn set on and allow it to warm up for at least 15 minutes.
2. Make up a list of stations desired ranging in order from high to low frequency making sure that each falls within the frequency range of its button.
3. Set band switch to "AM" and tune in first station selected (highest frequency).
4. Set band switch to "Pushbutton" and depress first button on the right.
5. Adjust B1 to tune in desired station.
6. Adjust B2 for maximum volume.
7. Alternately adjust B1 and B2 for maximum volume and best tone quality.
8. To set up the remaining button follow the same procedure outlined above.

HOWARD W. SAMS & CO., INC. • Indianapolis 7, Indiana

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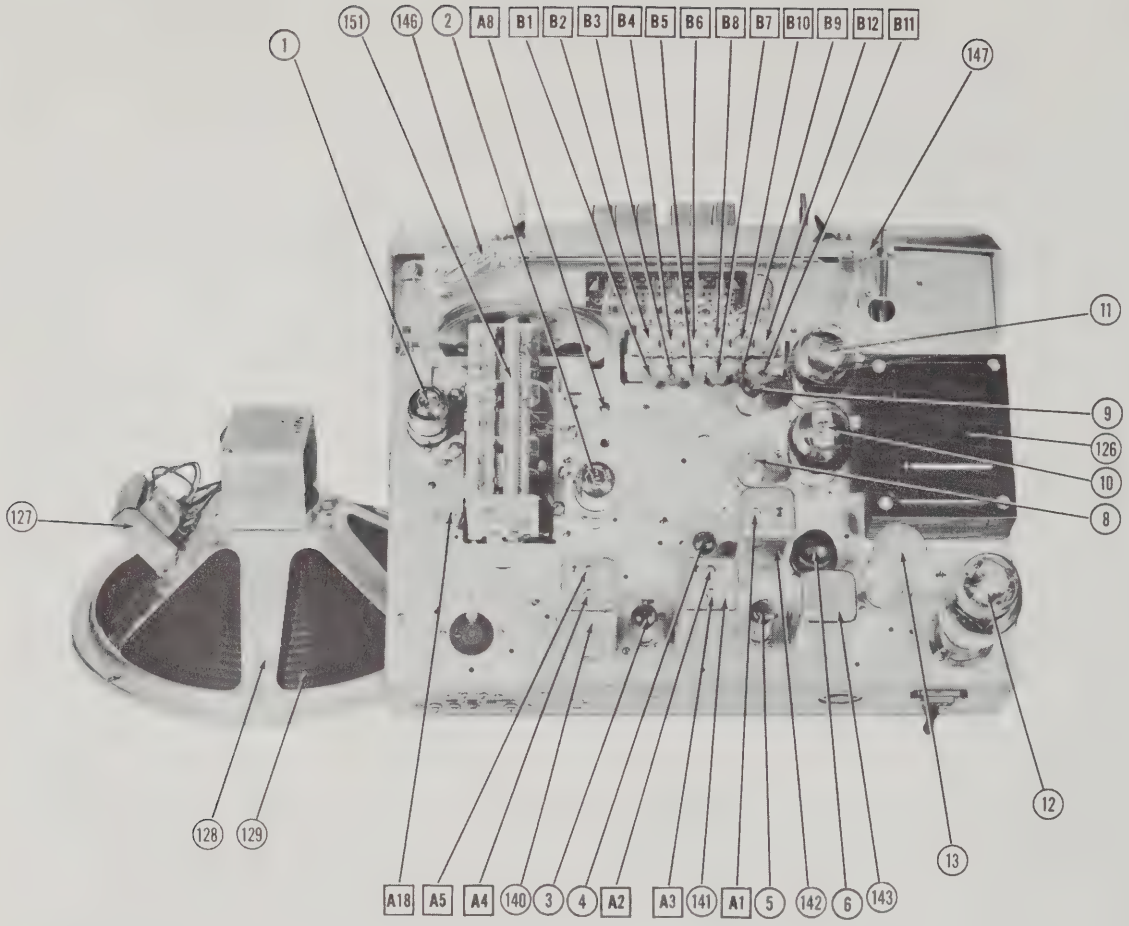
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B1
B2
B3
B4
B5
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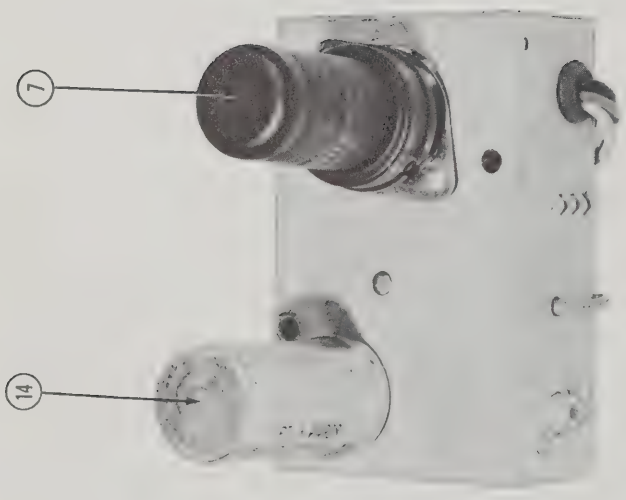
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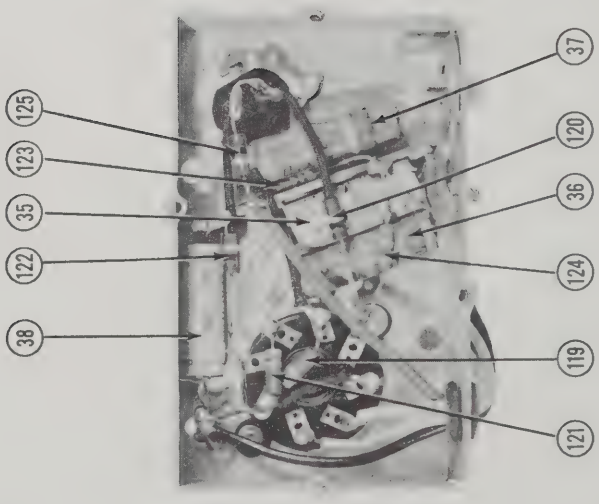
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101
A17
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97
96
A11
A12
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A13
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1.	FM RF Amp.	7F8	7F8	8BW	
2.	Converter	7F8	7F8	8BW	
3.	1st IF Amp.	6BA6	6BA6	7BK	
4.	2nd IF Amp.	6BA6	6BA6	7BK	
5.	Limiter	6AU6	6AU6	7BK	
6.	FM Detector	6H6GT	6H6GT	7Q	
7.	Phono Pre-Amp.	6SC7	6SC7	8S	
8.	AM DET-AVC-AF	6AT6	6AT6	7BT	
9.	Phase Inverter	6AT6	6AT6	7BT	
10.	Power Output	6Y6G	6Y6G	7AC	
11.	Power Output	6Y6G	6Y6G	7AC	
12.	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTING. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13A	40	450	V-3302	AF444J #	UP4445		DY-2X40-450	D12721	◓ Filter
B	40	400							■ Filter
C	16	350		PRS450/40	BR1635		M-16-450		▲ Filter
14	20	450	V-5765	AF4J	UP2045		DY-20-350	EL-20	Phono Decoupling
15	20	25	V-3236	PRS25/25	BR202A		M-25-25	TA-25	Output Cathode Bypass
16	2	50	V-4880		BR245				Stabilizing Cap.
17A	.01	600	V-3241	684-01	GT6S1	GP2-335-01	MPH-6-01	TC-11	Line Filter
B	.01	600		684-01	GT6S1	GP2-335-01	MPH-6-01	TC-11	" "
18	.002	600	RCP10M6202M	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	Output Plate Bypass
19	.002	600	RCP10M6202M	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	" " "
20	.05	400	RCP10W4503A	484-05	GT4S5		ST-4-05	TC-15	Audio Coupling
21	.01	400	RCP10M4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" "
22	.001	600	RCP10W6102K	684-001	GT6D1	GP2L-001	ST-6-001	TC-21	Tone Compensation
23	.02	400	RCP10W4230A	484-02	GT4S2		ST-4-02	TC-12	" "
24	.005	600	RCP10W6502A	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
25	.05	400	RCP10W4503A	485-05	GT4S5		ST-4-05	TC-15	Audio Coupling
26	.05	400	RCP10W4503A	485-05	GT4S5		ST-4-05	TC-15	" "
27	.01	400	RCP10W4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Tone Compensation
28	.002	600	RCP10W6202M	684-002	GT6D2	GP2M-002	ST-6-002	TC-22	"
29	.001	600	RCP10W6102K	684-001	GT6D1	GP2L-001	ST-6-001	TC-21	De-emphasis
30	.2	400		484-.2	GT4P2		ST-4-2	TC-2	RF Bypass Pwr. SupplyNote
31	.2	400		484-.2	GT4P2		ST-4-2	TC-2	" " " " Note 1
32	.01	400	V-5040-15	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	" " " "
33	.05	400	RCP10W4503A	484-05	GT4S5		ST-4-05	TC-15	AVC Filter
34	.05	400	RCP10W4503A	484-05	GT4S5		ST-4-05	TC-15	Osc. Feedback
35	.02	400		484-02	GT4S2		ST-4-02	TC-12	Audio Coupling Note 2
36	.005	600	RCP10W6502A	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
37	.005	600	RCP10W6502A	684-005	GT6D5	GP2M-005	ST-6-005	TC-25	" "
38	.01	400	RCP10W4103A	484-01	GT4S1	GP2-335-01	ST-4-01	TC-11	Tone Compensation
39	220	500	RCM20B221B	1468-00025	5W5T25	GP2K-250	MO.5-325	1FM-325	AF Plate Bypass
40	270	500	RCM20B271J	1469-00025	5R5T25	GP2K-270	MOS.5-325	MS-325	Diode Load Cap.
41	270	500	RCM20B271J	1469-00025	5W5T25	GP2K-270	MOS.5-325	MS-325	" " "
42	220	500	RCM20B221B	1468-00025	1D3S1	GP2K-250	MO.5-325	1FM-325	RF Filter
43	10000	300	RCM30B103M	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	Lim. Plate Decoup.
44	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Lim. Screen Bypass
45	47	500	R2CC26PJ 470K	1468-00005	5W5Q5	N150L47	MO.5-45	1FM-45	Lim. Grid Filter
46	100	500	RCM20B101M	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode RF Filter
47	100	500	RCM20B101M	1468-0001	5W5T1	GP1K-100	MO.5-31	1FM-31	Diode RF Filter
48	10000	300	RCM30B103M	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	2nd IF Plate Decoup.
49	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	2nd IF Screen Bypass
50	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
51	10000	300	RCM30B103M	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	1st IF Plate Decoup.
52	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	1st IF Screen Bypass
53	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	AVC Filter
54	10000	300	RCM30B103M	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	RF Bypass Pwr. Supply
55	47	500	R2CC26PJ 470K	1468-00005	5W5Q5	N150L47	MOS.5-45	1FM-45	Osc. Grid Cap.
56	180	500	RCM20C181J			GP2K-200			Osc. Coupling Silver
57	2200	300	RCM30B222M						Fixed Trimmer
58	2700	300	RCM30C272G						Fixed Trimmer Silver

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES	
106	15 Meg.	½	RC20AE156M	BTS-15 Meg.	Br.-Grn.-Blue	AF Grid
107	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl.	AF Plate Load
108	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl.	Phase Inverter Grid
109	150KΩ	½	RC20AE154M	BTS-150K	Br.-Grn.-Yl.	Phase Inverter Plate Load
110	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl.	Output Grid
111	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl.	" "
112	110Ω	3	V-4758	AB-100	Br.-Br.-Br.	Output Cathode
113	100Ω	½	RC20AE101M	BW-½-100	Br.-Blk.-Br.	Parasitic Suppressor
114	100Ω	½	RC20AE101M	BW-½-100	Br.-Blk.-Br.	" "
115	33Ω	½	RC20AE330M	BW-½-33	Or.-Or.-Blk.	" "
116	33Ω	½	RC20AE330M	BW-½-33	Or.-Or.-Blk.	" "
117	2700Ω	2	RC41AE272K	BT-2-2700	Red-Vi.-Red	Voltage Dropping
118	7500Ω	5	V-4759	AB-7500		Bleeder
119	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	1st Pre-Amp Grid
120	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl.	1st Pre-Amp Plate Load
121	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn.	2nd Pre-Amp Grid
122	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl.	2nd Pre-Amp Plate Load
123	33KΩ	½	RC20AE333M	BTS-33K	Or.-Or.-Or.	Tone Compensation
124	560KΩ	½	RC20AE564K	BTS-560K	Grn.-Blue-Yl.	" "
125	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl.	Decoupling

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.
126	117VAC @ 1.25A	600VCT .235ADC	5.2VAC @ 3.0A	6.5VAC @ 5.2A	V-4761	P-6315 †		

† Add series res. to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: WESTING. PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
127	5500Ω CT	3.7Ω	340Ω CT	.5Ω	Part of V-5769	A-3824	RO-305	A-2935	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
128	225Ω	3.7Ω	V-5769		12E22	
	CONE DIA.	V. C. DIA.				
129	11 1/2"	1 IN.				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: MEISSNER PART No.	
130	Loop Ant.		.1Ω	V-3283-3		
131	FM Dipole		0Ω	V-4777-2		
132	Loop Loading Coil		2.8Ω	V-4751		
133	AM Pre. Selector		2.8Ω	V-4752		
134	Ant. Coil FM		0Ω	V-4767		
135	1st FM RF		0Ω	V-4767		
136	FM Ant. Choke		0Ω	V-4887		
137	Osc.Coil BC		9Ω	V-4753	14-1060	
138	Osc. Cath. Coil BC		3.2Ω	V-3313		
139	Osc. Coil FM		0Ω	V-4768		
140A	1st IF AM	.	*7.3Ω	V-4621		* Resistance of both secondary windings.
B	1st IF FM					

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA WESTINGHOUSE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SOLAR PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
59	2700	300	RCM30C272G	1467-0025	1W5D25		MW.5-225	1FM-23	Pre Selector Tuned Circuit
60	220	500	R2CC36SL 221M	1468-00025	5W5T25	GP2K250	MO.5-325	1FM-325	RF Coupling
61	5000	300	RCM30B512M	1467-005	1D5D5	GP2M-005	MW.5-25	1FM-25	Conv. Cath. Bypass
62	71	500		1469-00007	5W5Q7	GP1K-75	MOS.5-47	MS-47	" " "
63	470	500	R5CC21ZY 471M	1468-0005	5W5T5	GP2K-500	MO.5-35	1FM-35	Osc. Feedback
64	10000	300	RCM30B103M	1467-01	1D3S1	GP2-335-01	MW.3-11	1FM-11	Fil. Bypass
65	22	500	R2CC21PJ 220K			N150K22			Fixed Trimmer
66	47	500	R2CC26PJ 470K	1468-00005	5W5Q5	N150L47	MO.5-45	1FM-45	RF Coupling
67	470	500	R5CC21ZY 471M	1468-0005	5W5T5	GP2K500	MO.5-35	1FM-35	2nd RF Plate Bypass
68	5	500	R2CC21CH 050D	1468-000005	5W5V5	NP0K-5	MO.5-55	MS-55	RF Coupling
69	15	500	R2CC21CH 150J			NP0K15		MS-415	Fixed Trimmer
70	470	500	R5CC21ZY 471M	1468-0005	5W5T5	GP2K500	MO.5-35	1FM-35	AVC Filter

Parallel sections too obtain desired capacity.
Note 1. Some models use one .1MFD resonant cap. (#V-5442-1) in place of these two caps.
Note 2. Some models use .05MFD in this application, replacements same as item #34.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WESTING. PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
71A	2 Meg.	½	V-3293	D13-139XX		Volume control tapped @ 500KΩ and 1 Meg.
B	Shaft		Not Req.	A		Attach to 71A Per Instructions.
C	Switch		Not Req.	41		" " " "
72A	1 Meg.	½	V-5130			Tone Control
B	2 Meg.	½	V-5130			Tone Control Dual Control

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WESTINGHOUSE PART No.	IRC PART No.	IDENTIFICATION CODES	
73	3300Ω	1	RC30AE332K	BTA-3300	Or.-Or.-Red	1st RF Plate Load
74	6800Ω	1	RC30AE682K	BTA-6800	Blue-Gray-Red	2nd RF Plate Load
75	120Ω	½	RC20AE121K		Br.-Red-Br.	2nd RF Cathode
76	33KΩ	½	RC20AE333K	BTS-33K	Or.-Or.-Or.	Converter Plate Load
77	470Ω	½	RC20AE471K	BTS-470	Yl.-Vi.-Br.	Converter Cathode
78	22KΩ	½	RC20AE223K	BTS-22K	Red-Red-Or.	Oscillator Grid
79	10KΩ	1	RC30AE103M	BTA-10K	Br.-Blk.-Or.	Oscillator Plate Load
80	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn.	Converter Grid
81	4.7 Meg.	½	RC20AE475M	BTS-4.7 Meg.	Yl.-Vi.-Grn.	AVC Network
82	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl.	" "
83	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn.	" "
84	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn.	" "
85	68Ω	½	RC20AE680K		Blue-Gray-Blk.	1st IF Cathode
86	15KΩ	½	RC20AE153K	BTS-15K	Br.-Grn.-Or.	1st IF Screen Dropping
87	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red	1st IF Plate Decoupling
88	33Ω	½	RC20AE330M		Or.-Or.-Blk.	Parasitic Suppressor
89	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl.	2nd IF Grid
90	68Ω	½	RC20AE680K		Blue-Gray-Blk.	2nd IF Cathode
91	33KΩ	½	RC20AE333K	BTS-33K	Or.-Or.-Or.	2nd IF Screen Dropping
92	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red	2nd IF Plate Decoupling
93	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl.	Diode Load
94	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or.	Diode RF Filter
95	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl.	AVC Network
96	100KΩ	½	RC20AE104K	BTS-100K	Br.-Blk.-Yl.	Limiter Grid
97	220KΩ	½	RC20AE224M	BTS-220K	Red-Red-Yl.	Limiter Screen Dropping
98	3300Ω	½	RC20AE332M	BTS-3300	Or.-Or.-Red	Limiter Plate Load
99	68KΩ	½	RC20AE683K	BTS-68K	Blue-Gray-Or.	De-emphasis
100	15KΩ	½	RC20AE153J	BTS-15K	Br.-Grn.-Or.	Ratio Detector Diode Load
101	15KΩ	½	RC20AE153J	BTS-15K	Br.-Grn.-Or.	" " " "
102	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl.	Phono Shunt
103	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl.	Tone Compensation
104	75KΩ	½		BTS-68K	Vi.-Grn.-Or.	" "
105	270KΩ	½	RC20AE274K	BTS-270K	Red-Vi.-Yl.	" "

Date 4/49 498-21 SET #60 folder 21

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

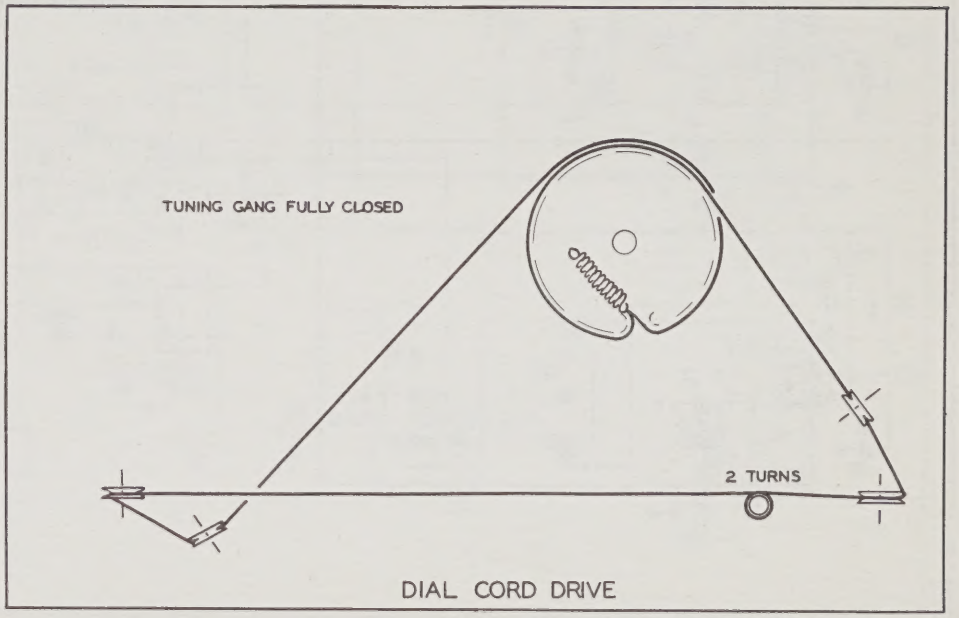
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA MEISSNER PART No.	
141A	2nd IF FM	‡ 6Ω	* 6Ω	V-4622		‡ Resistance of both primary windings.
B	2nd IF-FM					
142A	3rd IF AM	‡ 9.5	11Ω	V-4623		
B	3rd IF FM		1Ω			
143	FM Det.Tran	.5Ω	.1Ω	V-4624		
144	Fil. Choke		1Ω	V-4886-1		
145	Fil. Choke		1Ω	V-4886-1		

DIAL LIGHTS

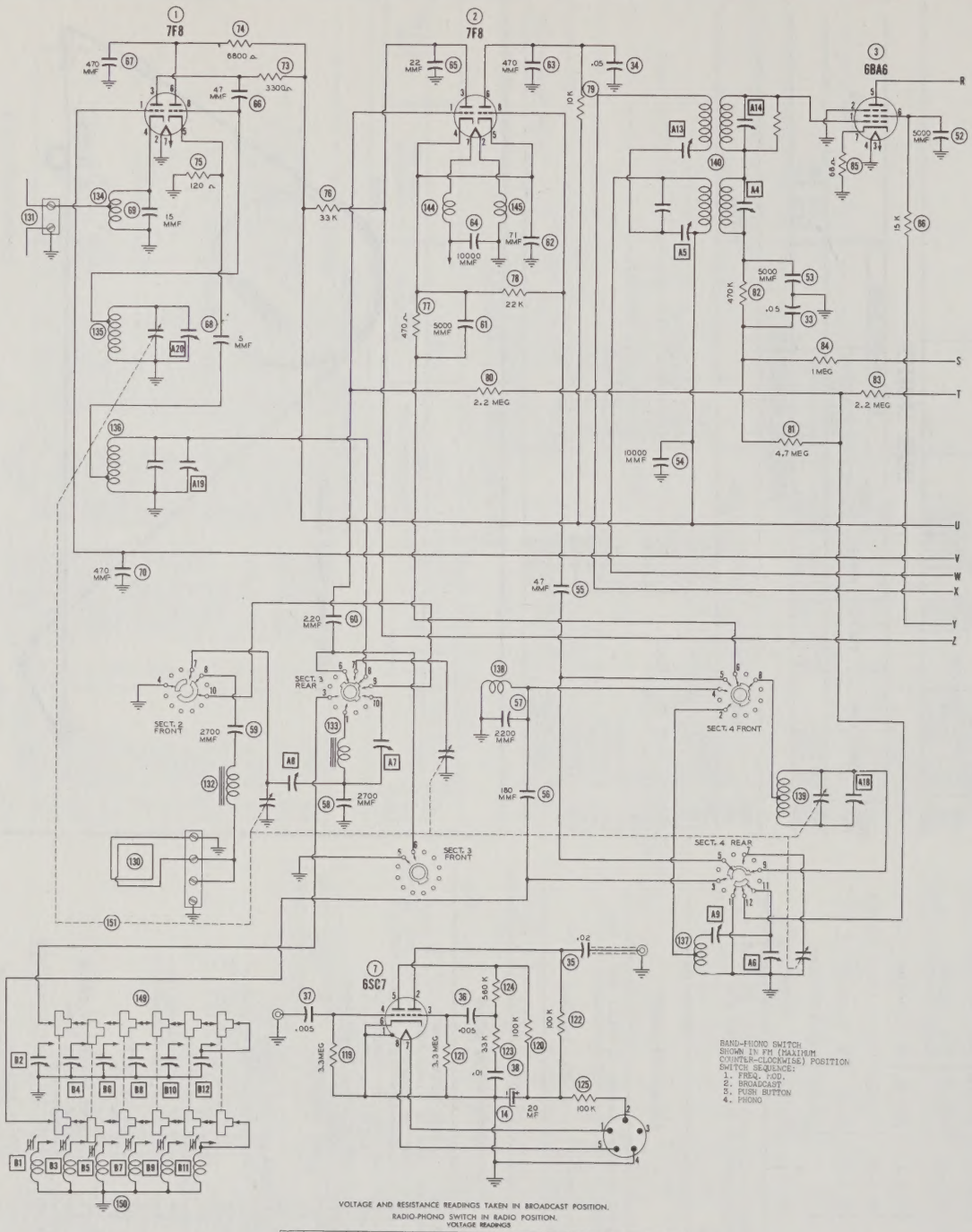
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA WESTINGHOUSE PART No.	REPLACEMENT DATA	NOTES
146	Bayonet	6-8V	0.25A	Blue	#44		Type #44
147	Bayonet	6-8V	0.25A	Blue	#44		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
148	Switch	V-5759	Band
149	Switch Assembly	V-3261-3	Push Button
150	Coil Assembly	V-3317	Push Button
151	3 Gang Var. Cap.	V-4750	(18-485MMF) Each section
A6	Dual Trimmer	V-4749	BC Osc. Adj.
A9			BC Osc. Adj. (Padder)
A7	Trimmer	V-4747	BC RF Adj.
A8	Trimmer	V-4746	BC Ant. Adj.
A18	Trimmer	V-4748	FM Osc. Adj.
A19	Trimmer	V-4748	FM RF Adj.
A20	Trimmer	V-4748	FM Ant. Adj.
	Dial Glass	V-4765	
	Dial Pointer	V-3399	



DIAL CORD DRIVE



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
RADIO-PHONO SWITCH IN RADIO POSITION.
VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F8	-.2VDC	0V	215VDC	0V	.8VDC	200VDC	6.5VAC	0V
2A	7F8	-2.8VDC	.1VDC	170VDC	4VDC	4VDC	190VDC	5.8VAC	** 5-5VDC
2B	7F8	0V	.1VDC	170VDC	4VDC	4VDC	190VDC	5.8VAC	** 5-6VDC
3	6BA6	-.1VDC	0V	6.5VAC	0V	205VDC	105VDC	1VDC	
4	6BA6	-.1VDC	0V	6.5VAC	0V	215VDC	95VDC	1VDC	
5	6AU6	-.8VDC	0V	6.5VAC	0V	240VDC	50VDC	0V	
6	6H6	0V	0V	-.3VDC	0V	0V	-.3VDC	6.5VAC	.3VDC
7	6SC7	0V	85VDC	-.6VDC	0V	85VDC	0V	6.5VAC	0V
8	6A7G	-.8VDC	0V	6.5VAC	0V	-.5VDC	0V	90VDC	
9	6A7G	-.5VDC	0V	6.5VAC	0V	0V	0V	70VDC	
10	6T9G	0V	0V	235VDC	165VDC	-.3VDC	-.3VDC	6.5VAC	14.5VDC
11	6T9G	0V	0V	235VDC	165VDC	-.2VDC	-.2VDC	6.5VAC	14.5VDC
12	5Y4G	0V	290VDC	0V	300VAC	0V	300VAC	0V	290VDC

*TAKEN WITH VACUUM TUBE VOLTMETER.
** Note: Osc. Voltage readings taken from pin 4 to pin 8.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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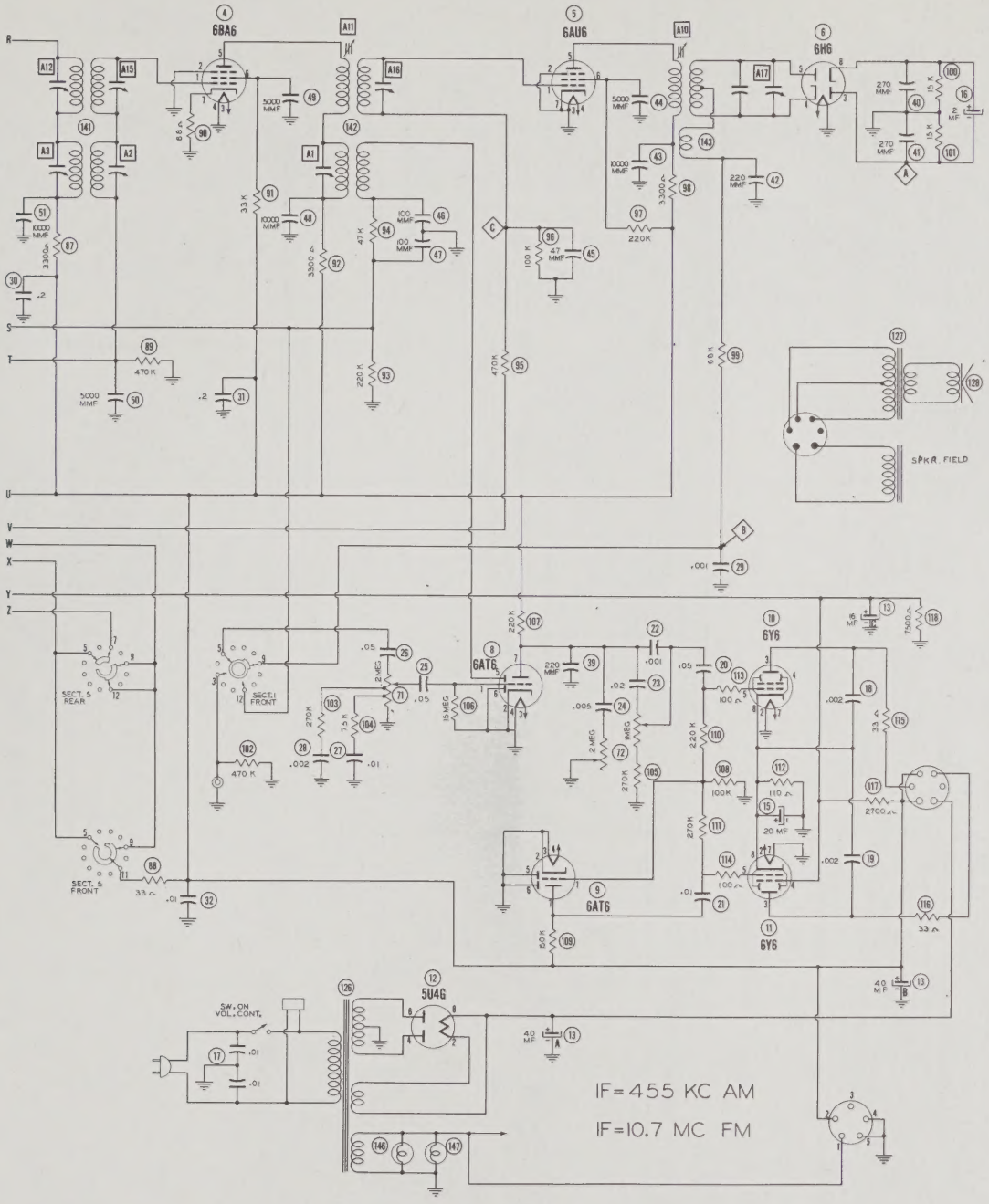

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
+ 1	7F8	470KΩ	0Ω	14KΩ	0Ω	120Ω	17KΩ	.1Ω	0Ω
2A	7F8	4.6Meg.	1Ω	43KΩ	470Ω	470Ω	20KΩ	1.1Ω	22KΩ
+ 2B	7F8	2.2Meg.	1Ω	43KΩ	470Ω	470Ω	20KΩ	1.1Ω	22KΩ
3	6BA6	1.7Meg.	0Ω	.1Ω	0Ω	14KΩ	30KΩ	6KΩ	
4	6BA6	47KΩ	0Ω	.1Ω	0Ω	14KΩ	43KΩ	6KΩ	
+ 5	6AU6	100KΩ	0Ω	.1Ω	0Ω	14KΩ	330KΩ	0Ω	
+ 6	6AU6	0Ω	0Ω	18KΩ	Inf.	Inf.	15KΩ	.1Ω	15KΩ
7	6SC7	0Ω	210KΩ	6.8Meg.	6.8Meg.	210 KΩ	0Ω	.1Ω	0Ω
8	6AT6	15 Meg.	0Ω	.1Ω	0Ω	270KΩ	0Ω	330KΩ	
9	6AT6	100KΩ	0Ω	1Ω	0Ω	0Ω	0Ω	160KΩ	
10	6Y6G	0Ω	0Ω	10KΩ	10KΩ	320KΩ	320KΩ	1Ω	110Ω
11	6Y6G	0Ω	0Ω	10KΩ	10KΩ	320KΩ	320KΩ	1Ω	110Ω
12	5U4G	Inf.	10KΩ	Inf.	80Ω	Inf.	27Ω	Inf.	10KΩ

† VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
RESISTANCE READINGS IN THE 9 + CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Do not attempt FM Alignment until AM Alignment has been completed.
To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 1 (Grid) of 6BA6 2nd. IF tube (4). Low side to chassis.	455KC	AM (1 position from fully counter clockwise.)	Tuning cap fully closed	Across Voice Coil	A1	Adjust for maximum output.
2.	.1MFD	High side to pin 1 (Grid) of 6BA6 1st IF tube (3). Low side to chassis.	"	"	"	"	A2, A3	" " " "
3.	.1MFD	High side to pin 1 (Grid) of 7F8 Conv. (2). Low side to chassis.	"	"	"	"	A4, A5	" " " "
4.		Loop	1500KC	"	1500KC	"	A6	" " " "
5.		Loop	1400KC	"	Tune for maximum output.	"	A7, A8	" " " "
6.		Loop	600KC	"	"	"	A9	Rock tuning cap and adjust for maximum output. Repeat steps 4, 5, and 6 until no further improvement can be made.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD Mic. A Cap.	High side to center FM stator of tuning cap. Low side to chassis.	10.7MC (Unmod.)	FM (fully counter clockwise)	Tuning cap fully closed	DC Probe to point (A) Common to chassis.	A10, A11, A12, A13	Short rear FM stator of tuning cap to chassis. Detune A14, A15, A16, A17 1/4 turn clockwise. Adjust A10, A11, A12, A13, for maximum deflection.
8.	.001MFD Mic. A Cap.	"	"	"	"	"	A14, A15, A16	Adjust for maximum deflection. Do not attempt to readjust A10 thru A13.
9.	.001MFD Mic. A Cap.	"	"	"	"	DC Probe to point (B) Common to chassis.	A17	Adjust for zero deflection. Remove short from rear FM staor of tuning cap. Continue with FM-RF alignment in step 10.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60\ modulation and 450KC sweep. Use 120\ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6BA6 1st IF tube (3). Low side to chassis.	10.7MC (freq. mod.)	FM (fully counter clockwise.)	Tuning cap fully closed	Vertical Input to point (A) Ground to chassis.	A16, A11, A15, A12	Short rear FM stator of tuning cap to chassis. Adjust A16, A11, A15, A12 for maximum amplitude, symmetry and coincidence of pattern per Fig 1.
8.	.01MFD	High side to center FM stator of tuning cap. Low side to chassis.	"	"	"	"	A14, A13	Adjust for maximum amplitude, symmetry and coincidence of pattern per Fig 1.
9.	.01MFD	High side to pin 1 (Grid) of 6BA6. 2nd IF tube (4). Low side to chassis.	"	"	"	Vertical input to point (B) Ground to chassis.	A10, A17	Alternately adjust A10 for maximum amplitude and A17 for maximum straightness of crossover lines with crossover occuring at center of pattern per Fig 2. Remove short from rear FM stator of tuning cap. Continue with FM-RF alignment in step 10.

FM RF ALIGNMENT

Dial calibration may be checked by setting signal generator to 90MC and tuning receiver for maximum deflection. If dial pointer indicates 90MC the following may be omitted. If pointer is higher than 90MC, slightly expand FM Osc. Coil (138) ; If pointer is on low frequency side of 90MC, slightly compress FM Osc. Coil. Repeat adjustments at 90 and 105MC until no further improvement can be made.
Tracking of FM-RF and Ant. Coils may be checked by setting the signal generator to 90MC, tuning the receiver for maximum deflection, and readjusting A19 and A20. If maximum settings are the same as for 105MC the following may be omitted. If capacitance of either A19 or A20 must be increased, slightly compress either FM RF Coil (135) or FM Ant. Coil (134), IF capacitance of either A19 or A20 must be decreased, slightly expand either FM RF Coil or FM Ant. Coil. Repeat adjustments of A19 or A20 at 105 and 90MC until no further improvement can be made.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	72Ω carbon res.	High side to ungrounded FM Ant. terminal. Low side to chassis.	105MC (Unmod)	FM	105MC	DC Probe to point (A) Common to chassis.	A18	Adjust for maximum deflection. Check dial calibration at 90MC per pre-alignment instructions.
11.	72Ω carbon res.	"	98MC (Unmod.)	"	Tune for maximum deflection.	"	A19, A20	Rock tuning cap and adjust for maximum deflection. Check tracking per prealignment instructions. If coils are adjusted repeat steps 10 . and 11 until no further improvement can be made.

FIG. 1

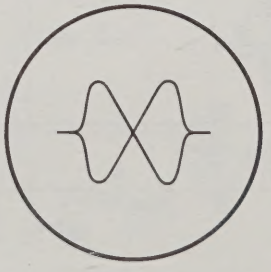

FIG. 2